Conseil Permanent International pour
l'Exploration de la Mer
CHARLOTTENLUND SLOT – DANEMARK

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RAPPORTS
ET
PROCÈS-VERBAUX DES RÉUNIONS

Volume 142

1ÈRE PARTIE
PROCÈS-VERBAUX
Octobre
1956

2ÈME PARTIE
RAPPORT ADMINISTRATIF
1955

En Commission chez
ANDR. FRED. HØST & FILS
COPENHAGUE

Prix: Kr. 16.00

Avril 1957

Conseil Permanent International pour
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COPENHAGUE, OCTOBRE 1956

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* Empêché d'assister à la réunion.

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AGENDA

for the forty-fourth Meeting of the International Council for the Exploration of the Sea.
Copenhagen, 1st—9th October, 1956.

A. General Assembly: Opening Meeting.

1. Welcome and Opening Address by the President.
2. Presentation of Administrative Report.
3. Report on Permanent Commission.
4. Report on International Whaling Commission.
5. Report on International Commission for the Northwest Atlantic Fisheries:
   a. Meeting of the Standing Committee on Research and Statistics at Biarritz.
   b. Annual Meeting at Halifax.

B. Meeting of Delegates.

6. Opening of the Proceedings by the President.
7. Presentation of Estimated Statement of Accounts for 1955-56.
8. Adoption of the Administrative Report.
9. Election of President, First Vice-President and three Vice-Presidents.
10. Consideration of the Consultative Committee's Recommendations approved by the Bureau.
11. Final Approval of the Accounts for 1954-55.
12. Estimate for the Financial Year 1956-1957.
13. Nomination of Finance Committee Members and Editors.
14. Other Business.

C. General Assembly: Final Meeting.

15. Opening of the Proceedings by the President (including Budget Summary).
16. Presentation of Recommendations adopted by the Council.
17. Time and Place for next Council Meeting.
18. Other Business.
19. Conclusion of the Meeting.

1ÈRE PARTIE

PROCÈS-VERBAUX

REPORT

of

THE FORTY-FOURTH MEETING OF THE COUNCIL

General Assembly, Opening Meeting, Monday, 1. October 1956, at 10.00 a. m.

Agenda, Point 1. The President, in opening the meeting, addressed the company as follows:—

"Ladies and Gentlemen,

I take great pleasure in extending to you a cordial welcome to the 44th Statutory Meeting of the International Council for the Exploration of the Sea.

These meetings are of greater and greater importance. On the one hand the technical means for the exploration of the sea are steadily becoming more and more effective, with the result that the scope of the scientific work of the Council is constantly being expanded. On the other hand, exploitation of marine resources is becoming more and more intense, which means that we face an increasing demand for exact knowledge as to the existing resources and the possible effects of exploitation.

It is not necessary for me to expand upon the importance of our task, and I shall confine myself to expressing the confident hope that this meeting will further co-operation between all adhering nations and advance our knowledge of the scientific problems which are our concern."

The President then suggested that, as was customary, a telegram should be sent to His Majesty the King of Denmark, in the following terms:—

"A Sa Majesté le Roi de Danemark.

Les membres du Conseil International pour l'Exploration de la Mer réunis à Copenhague à l'occasion de sa quarante-quatrième Conférence Statutaire demandent la permission de témoigner à Votre Majesté leurs sentiments les plus respectueux.

H. U. SVERDRUP,
Président."

The President also proposed that the following telegram should be sent to the Honorary President, Mr. A. T. A. DOBSON:—

"The members of the International Council for the Exploration of the Sea send affectionate greetings and sincere wishes to their Honorary President.

H. U. SVERDRUP,
President."

The President continued:—

"I regret to tell you that since we last met two members of this Council have died. We have lost Mr. D. J. MATTHEWS, British expert in 1909, 1924, and from 1928 to 1938, and Dr. C. B. REES, Scotland, who attended last year's meeting as an expert.

Among the Delegates, Mr. WALL has retired as a Delegate of the United Kingdom, and is replaced by Mr. R. S. WIMPENNY. Professor JOHAN T. RUUD is the new Delegate for Norway, with Mr. G. ROLLEFSEN as First Delegate.

We have the pleasure of meeting Professor G. NIKOLSKY from the Soviet Union together with Professor N. A. DMITRIEV, who attended last year. We also have with us a number of observers from other scientific bodies and from countries which are not members of the I.C.E.S., together with a number of other guests. It is a pleasure to welcome them; we appreciate the interest shown by the organizations and the individuals in the activities of this Council."

Agenda, Point 2. The President drew attention to the Administrative Report of the Office and announced that copies of the Administrative Reports of Committees would be found at Charlottenlund Slot in the members' pigeon-holes.

Agenda, Point 3. The President called upon the newly elected Chairman of the Permanent Commission, Mr. KLAUS SUNNANÅ, who gave a report on the fifth meeting of the Permanent Commission which was held in London from 8. to 10. May 1956.

Agenda, Point 4. The President called upon Dr. G. J. LIENESCH, Chairman of the International Whaling Commission, who gave a short report of the proceedings of the eighth meeting of the commission.

Agenda, Point 5 a. The President called upon the Secretary General to report on the meeting of the Standing Committee on Research and Statistics of I.C.N.A.F., held in Biarritz in March.

Agenda, Point 5 b. The President then called upon Mr. A. J. AGLEN, who reported on the annual meeting of I.C.N.A.F., held in Halifax in June.

Professor ERKKI HALME briefly described the proceedings of the International Inland Fisheries meeting in Helsingfors, 24. to 26. July 1956.

Finally Mr. POPPER, observer for F.A.O., addressed the Meeting on behalf of his organization.

The meeting terminated at 10.50 a.m.

Meeting of Delegates, First Session, followed immediately

Agenda, Points 6 and 7. The President opened the proceedings and presented the estimated Statement of Accounts for 1955/1956.

Agenda, Point 8. The President suggested that as the Administrative Reports of Committees had not yet been distributed their adoption should be postponed until the last meeting of Delegates.

Agenda, Point 9. The President referred to the election of the Bureau and said that all the present members were eligible for re-election. The Bureau proposed that this year the procedure should not be the same as that followed in former years. The Bureau suggested that instead of the nomination of a small *ad hoc* Committee Bureau members should leave the room while the Delegates formed themselves into a Committee to discuss the composition of the Bureau. When the Delegates had agreed on a proposal, the Bureau members should return and the election should proceed.

This proposal was approved and the President vacated the chair which was taken by the Chairman of the Consultative Committee, Mr. R. S. WIMPENNY.

When the members of the Bureau had returned Mr. WIMPENNY said that it gave him great pleasure to announce that the Delegates proposed that the President, the First Vice-President, and the three Vice-Presidents be re-elected for another year. This was carried with acclamation.

The President thanked the Delegates for their confidence and assured them that the Bureau would continue to do their best for the Council. Before closing the meeting the President suggested that next year the election of the Bureau should be postponed to the last meeting of Delegates in order to give the Delegates an opportunity to discuss the matter. This would also have the advantage that the Bureau responsible for the arrangements of the meeting would be in office during that meeting.

Dr. BÜCKMANN pointed out that if the matter of the election were raised at the first Delegates meeting, the Delegates could discuss the matter in the course of the week.

The new procedure was adopted.

The meeting terminated at 11.20 a.m.

Meeting of Delegates, Second Session, Tuesday, 9. October 1956, at 10.00 a. m.

Agenda, Point 8. The President in opening the meeting reminded the Delegates that the adoption of the Administrative Report had been postponed from the last meeting to give more time to study it. No further comments having been offered, the Report was adopted by the Council.

Agenda, Point 10. The President referred to the recommendations transmitted from the Consultative Committee, a list of which had been distributed among the Delegates. In this connexion he invited the Delegates' attention to the recommendation for an *ad hoc* Committee set up to deal with the reorganization of the Committees, and asked members of the Council to send suggestions on the matter to Dr. WENT. He hoped the question could be finally settled at the next Council Meeting.

The President informed the Delegates that the invitation from I.C.N.A.F. for I.C.E.S. to hold a meeting of the Comparative Fishing Committee at Lisbon during the "7-day Workshop" in May—June had been accepted.

As regards Recommendation 2 from the Herring Committee that three experts nominated by this Committee should meet in Copenhagen as soon as possible to prepare plans for a large-scale tagging experiment in the southern North Sea, the President said that as soon as the details had been settled, the Governments concerned would be invited to send

representatives to a special meeting to be convened by the Secretary General to discuss the question of participation.

With regard to Recommendation 1 from the Herring Committee, concerning the urgent need to examine the stocks of herring in the southern North Sea, the Bureau had decided that the attention of the appropriate Governments should be drawn to the concern and apprehension of the Council at the state of the stocks of herring therein.

The recommendations were then adopted *en bloc* (see list of Resolutions below).

Agenda, Point 11. The President formally moved the approval of the Accounts for 1954/1955. This was carried.

Agenda, Point 12. In presenting the Budget the President pointed out that income was expected to exceed expenditure by kr. 7,925[1]). This was rather low in comparison with the last year's figure, as a result partly of a rise in salaries and partly of a considerable increase in travelling expenses, which would amount this year to kr. 32,200. Various special meetings had been decided on for the coming year, and as the next Council Meeting was being held outside Copenhagen, travelling expenses for the Secretariat would be involved. Slightly more had been allowed under the heading of Publications next year, this item amounting to kr. 106,600.

The Estimates for 1956/1957 as presented were adopted.

Agenda, Point 13. The President informed the Council that as regards the *ex officio* members of the Finance Committee, he had again nominated Dr. Leloup as the member from the Bureau and proposed the re-election of Dr. Cuesta and the election of Dr. Nikolsky and Dr. Claussen. Approved.

The President proposed that Mr. Lumby be re-elected Editor of the *Journal du Conseil* and that Dr. Fraser and Dr. Thorson be re-elected Co-editors of the Plankton Sheets. Approved.

Agenda, Point 14. The President said that he took great pleasure in announcing that Italy wished to join the Council. According to the Statutes it was necessary for all member states to give their consent. The Danish Foreign Office had been requested to approach member states, asking for their approval of the Italian request. Unfortunately, the time was too short to expect the answers to be received before 1. November, the date on which the Council's financial year began. However, Delegates were asked to do what they could to ensure prompt handling of the matter.

The President then proceeded to the question of the Status of the Council and said that at last year's meeting the Bureau had been authorized by the Delegates to inquire whether the Danish Government would grant the Council the special privileges and immunities normally enjoyed by international organizations. The Danish Government replied to the effect that Danish Law was formulated in such a manner that the Danish Government was unable to accord the Council such privileges, but the Danish Foreign Office would be glad to render the Council any assistance desired.

The Bureau proposed to take no further steps in the matter, unless the Delegates wished otherwise. The President invited comments on the matter.

Mr. Rollefsen said:—

"Mr. President, I must admit that I do not know who started this ball rolling, but since I some years ago became involved in the matter I feel it is only right for me to thank you for the great interest you have shown and for the initiative you have taken in attempting to have the Status of the International Council brought into accord with the demands of today.

I am very sorry to learn that you have encountered such difficulties in a task which in my opinion ought to have been simple. It may be that I and many others have completely misunderstood the idea and misjudged the importance of I.C.E.S. But I cannot believe we are wrong, because there are so many indications of the need for I.C.E.S. to be accorded this Status. I shall not take up the Council's time by reciting them here, but will only mention that I.C.E.S. was born at a time when international relationships and activities were simple and uncomplicated compared with the conditions of today. The fact that I.C.E.S. has been strong enough to survive two world wars and has been able to unite divided nations, so that work was resumed immediately peace came, must make us believe that our Organization can at least fullfil its duty.

Much has happened in the international arena in the last ten years; new international bodies have sprung up, new channels for co-operation between nations have been constructed, and world problems have been defined and analysed.

Rational exploitation of the resources of the sea has become a world problem of the highest importance, and in international discussions it has been repeatedly stated that the harvesting of the oceans must be based on scientific knowledge. This brings I.C.E.S. into the very centre of the picture. Where would we have been today without the work done by I.C.E.S. in the past? It cannot be right to keep I.C.E.S. in the shade while the sun is permitted to shine on other international organizations, simply because they are younger and were born under another star.

The question of the acquisition by I.C.E.S. of certain international privileges is not a mere question of money. It is a matter which concerns the *prestige* of an old and famous international organization; it is a question of the *respect* for the work done by this Organization. But it is also a question of the *protection* which has now become essential for international undertakings like ours, financed in the way we are.

[1]) This sum increased later by kr. 10,000 owing to the participation of Italy.

The need for food for the constantly increasing population of the world calls for great activity on the part of I.C.E.S., more so now than ever before. It is our simple duty to do what we can to meet the new demands and enable I.C.E.S. to answer the burning questions as quickly as possible. For that reason we have brought our Organization to a highly efficient state in all respects.

I have taken up a good deal of your time now, and I shall do no more than to ask you, Mr. President, to try one more approach to those authorities whom you think can help us to reach a proper solution of this important question."

Then Dr. HULT said:—

"Mr. President, I was very sorry indeed to hear that the Danish Government could not see their way to grant the Council the privileges we asked for. As a representative of Sweden, one of the two countries responsible for establishing the Council, I must say that I had not expected such an answer. I think it is a matter of practical importance, as well as of prestige for the Council to have the question of these privileges settled as soon as possible.

I will not touch on the legal issues, as I am not myself a lawyer, but I should like to say that I have consulted an expert in our Foreign Office on the matter, and he told me that it is now the common practice to grant international organizations established on a governmental basis such privileges as I.C.E.S. has asked for.

I believe the Danish Government might find it possible to grant the Council these privileges without consulting Parliament. If that is not so, I think we should give the Danish Government another chance to lay the matter before Parliament during the present session.

If, however, the matter cannot be put before Parliament at this session, I think our Governments might consider whether to move the headquarters of the Council to a country willing to allow the privileges now common to other international organizations which have settled in Copenhagen. I think the reason why these other organizations have been granted privileges similar to those enjoyed by international organizations in every other country is clear: they would otherwise have gone elsewhere. The Council on the other hand has already been settled in Denmark for more than 50 years.

Moreover, the fact of the Council's residence in Copenhagen carries considerable advantages to Denmark. For instance, the Estimates for 1956/57 show that salaries amount to about kr. 142,000, and that in addition kr. 27,500 are paid out in pensions. Although the Secretary General, as an Icelandic Fishery Attaché, is free of personal taxation, nevertheless about kr. 120,000 are left in salaries in respect of which various recipients have to pay taxes. Thus, it seems that the sum paid to Denmark in taxes, about kr. 20,000, is almost the same as the amount which Denmark contributes to I.C.E.S.

Moreover, about kr. 100,000 are paid out each year for printing in Denmark; about 150 persons visit Denmark in two years out of three in connexion with the statutory meetings of I.C.E.S., and I think these people spend a not inconsiderable sum of money in Denmark. The Council has also had to pay customs duty on the *Herring Atlas* for instance, as this was regarded as a picture book by the customs authorities, so I am told. It seems to me only common sense that salaries paid from international sources should be free of income tax; the money paid to the Staff should all go to that Staff and not in part to the treasury of one of the member countries.

It is also necessary that the Council should have at least the privileges customary to international bodies. Indeed, on account of its international editorial activities these privileges may be more important than they would be to certain U.N. bodies, for instance."

The President then asked the Delegates to decide by vote whether to accept the proposal made by Mr. ROLLEFSEN and Dr. HULT that the Bureau should continue to stress the matter of Status, or whether further action should be postponed until the next Council Meeting. The voting was unanimously in favour of the Bureau processing the matter and the President assured the Delegates that the Bureau would do their utmost to attain the end decided.

Prof. CIEGLEWICZ asked whether at next year's Council Meeting it would be possible to set up a committee to deal with ecological problems, as he was of the opinion that there was an urgent need for such a committee. Mr. WIMPENNY referred Prof. CIEGLEWICZ to Recommendation 1 (b) and asked him to send his proposal to Dr. WENT, so that it could be considered in the appropriate committee.

Dr. WENT proposed that a telegram be sent to Dr. HAVINGA, who would no longer be attending the meetings of the Council as a Delegate. This proposal was unanimously adopted, and the following telegram was sent:—

"Colleagues on the Council convey best wishes for speedy recovery and future happiness."

The meeting terminated at 10.55 a.m.

General Assembly, Final Meeting, Tuesday, 9. October 1956, at 11.00 a. m.

The President opened the meeting and announced that a reply had been received to the telegram sent to His Majesty the King of Denmark:—

"Mes remerciements sincères pour votre aimable télégramme. FREDERIK R."

A reply to the telegram sent to the Honorary President, Mr. A.T.A. DOBSON, had also been received:—

"My heartfelt thanks.
DOBSON."

Referring to the Budget for 1956/1957, the President said that the total expenditure for the year was expected to be kr. 388,592, which left an excess of income over expenditure of kr. 7,925.50[1]).

Agenda, Point 16. The President outlined the series of resolutions adopted by the Council on the basis of the Consultative Committee's recommendations.

Agenda, Point 17. The President called on Mr. ROLLEFSEN, who said that he had been authorized by the Norwegian Government to invite the International Council for the Exploration of the Sea to hold its next meeting in Bergen. If it were found possible, as he hoped, to accept the invitation, they would do their best to ensure a successful meeting.

The President then announced that the next meeting of the Council would be held in Bergen from 30. September to 8. October 1957. He also announced that F.A.O. was convening an International Fishing Gear Congress, to begin in Hamburg on 7. October 1957; those of the experts attending the Council meeting who had also to attend the Hamburg meeting might leave Bergen on 5. October.

Agenda, Point 18. The President informed the meeting that Italy was desirous of joining the Council, and he was sure that all the members of the Council would welcome Italy as a fellow member.

Mr. C. J. KERSWILL, who was present as observer for Canada, expressed his appreciation of having been able to attend the Council Meeting; the meetings of the Salmon and Trout Committee especially had been a great experience.

The meeting terminated at 11.50 a.m.

[1]) See footnote, page 13.

Resolutions passed by the 44th Statutory Meeting, 1956

Organization

C. Res. 1956/1:

(a) It was decided that the election of the Bureau should be postponed to the last meeting of Delegates.

(b) The *ad hoc* Committee appointed at the first meeting of the Consultative Committee to consider the Memorandum by Messrs. HULT and WIMPENNY on the need for re-arrangement of the activities of the Committees of the Council held a number of discussions during the week. The *ad hoc* Committee was of the opinion that changes should only be made after very careful consideration and it was decided that proposals from members of the Council should be sent, in triplicate, to Dr. WENT and that the question should be dealt with again at the next Council meeting.

Publications

C. Res. 1956/2:

(a) It was decided that the papers presented at the meeting on "Herring Races" and at the special meeting on the "Southern North Sea Herring Fishery" should be printed in the series *Rapports et Procès-Verbaux*, in so far as they would not appear in national series.

(b) It was agreed that an extension of the present *Synoptic Hydrographic Charts* should include the area of Kattegat, the Belts, and the western Baltic, the number of observations for an extension towards north and west being insufficient. The extension proposed would involve an additional cost of about kr. 600.00 per annum.

(c) It was agreed that lists of places and times of bathythermograph observations be published in the *Bulletin Hydrographique* in such a way that it is shown whether an extract of any particular observations is available at the Service Hydrographique or not. In the latter case reference should be made in the *Bulletin Hydrographique* to the institution possessing the observation.

(d) It was resolved that the statistical areas used in the I.C.N.A.F. organization should be illustrated in the *Bulletin Statistique* instead of the present chart of the Atlantic coast of North America.

Action for the Bureau

C. Res. 1956/3:

(a) It was resolved that the Bureau be authorized to follow up the question of the Status of I.C.E.S.

(b) In accordance with Recommendation 1 of the Herring Committee the attention of the Governments of the countries fishing in the southern North Sea was

to be drawn to the concern and apprehension of the Council at the state of the stocks of herring therein.

(c) It was resolved that the Council should request the Danish Foreign Office to approach those countries which have been unable to provide statistics relating to fishing effort and urge upon them the necessity of such returns being made available in as complete and exhaustive manner as possible in the future. It is of great importance that these returns should be rendered to the General Secretary by the September following the year to which they relate.

(d) The need for a detailed effort statistics concerning the herring fishery in the North Sea was emphasized. These statistics should, as far as possible, be broken down to small areas and months.

Records of Hydrographical and Statistical Data

C. Res. 1956/4:

(a) It was decided that extracts of bathythermograms received by the Service Hydrographique be put on punched cards. The yearly expenditure would amount to about kr. 300.00.

(b) The Council approved that a sum of kr. 500.00 be allocated to meet the cost of I.B.M. punched cards for filing statistical data on the herring fishery in the southern North Sea.

Special Meetings

C. Res. 1956/5:

(a) It was agreed that a meeting called for by the Baltic-Belt Seas Committee to discuss "Measures for improving the stock of demersal fish in the Baltic" should be held during the course of the next Council Meeting.

(b) It was decided that the Plankton Committee should hold a special meeting on "Measurements of primary production in the sea" for two days in advance of the Council Meeting. This involved 2 days extra subsistence for the General Secretary. It was hoped that U.N.E.S.C.O. would make funds available to cover the expenditure in connexion with invitation of experts from U.S.A. and some other countries as well as for cost of printing of the papers presented at the meeting.

Intermediate Meetings

C. Res. 1956/6:

(a) The I.C.N.A.F. invitation for I.C.E.S. to hold a meeting of its Comparative Fishing Committee at Lisbon during the course of the "7-day Workshop" in May—June 1957, was welcomed and accepted. In connexion with this meeting it was decided that an amount not exceeding kr. 5,000 should be made available by the Council for appropriate subsistence for the Chairman and 14 members of the Committee for 5 days.

(b) The Council approved of Recommendation 2 of the Herring Committee that three experts nominated by this Committee should meet in Copenhagen as soon as possible and in all events before the end of 1956 in order to prepare detailed plans for a large-scale tagging experiment in the southern North Sea. It is expected that such a plan will involve participation and financial contributions by the interested Governments and that, as soon as possible, these Governments will be invited to send representatives to a special meeting convened by the Secretary General, at which the question of participation will be discussed. This would involve an expenditure of kr. 2,000.

(c) the Council approved that a meeting of the Sub-Committee on the Preparation of Mean Charts of the Salinity and Temperature of the Surface Layer should be held either in Copenhagen or Hamburg as necessary in 1957. The estimated cost was to be about kr. 2,500. Mr. SMED was co-opted as a member of the Committee.

(d) It was resolved that Messrs. R. J. H. BEVERTON, B. B. PARRISH and A. VON BRANDT should be co-opted as junior members of the Liaison Committee. A sum of kr. 4,500 was set aside for travelling expenses for these three members for meetings in connexion with work for the Permanent Commission.

Other Recommendations

C. Res. 1956/7:

Distant Northern Seas Committee:

The Distant Northern Seas Committee recommends that the several Subject Committees be asked to redraft the priority programme of their subject with respect to the areas concerned.

Gadoid Fish Committee:

1. Cruise programmes should allow the research vessels to meet in appropriate places for exchange of views and results.

2. The actual research workers should be given opportunities, also in between I.C.E.S. meetings, to discuss with colleagues from other countries programmes of work, standardization of methods, etc.

Herring Committee:

3. Northern Waters. The Herring Committee recommends that the scope of co-operation in herring research in northern waters should be enlarged.

Salmon and Trout Committee:

1. Data relating to the appearances of disease in pond-reared fish should be made available from time to time at meetings of this Committee.

2. Member countries should be encouraged to exchange ova of salmon and trout for the purpose of scientific investigations.

3. Members should be asked to furnish full details of all fish passes for salmon and trout erected within their respective countries with a view to considering the advisability of preparing a handbook on this subject.

4. Member countries should be asked to investigate the food of the porpoise (*P. phocaena*) in the Baltic, together with the factors governing its abundance in different years.

Statistical Committee:

2. The Statistical Committee is conscious of an urgent need for further catch and effort statistics for all species caught in the I.C.E.S. area, for each method of capture, subdivided by area and time intervals, and of the growing desirability of some standardization in collection, breakdown, and handling of statistics amongst different international organizations.

The Committee is of the opinion that, while at present the facilities for handling the statistical data are sufficient for the Council's needs, the growing volume of data and the need for standardization demand serious consideration of the question of introducing the use of mechanical sorting methods in the near future.

The Committee also feels that steps should be taken by the Council to discuss the question of standardization of classification and method of manipulation with other international organizations.

Budget for the Financial Year $^{1}/_{11}$ 1956—$^{31}/_{10}$ 1957

EXPENDITURE

	D. Kr.	D. Kr.
I. Incidentals		
1. President	5,000.00	
2. Chairmen of Committees	20,900.00	
		25,900.00
II. Salaries		
1. General Secretary	23,000.00	
Administrative Department:—		
2. Assistant Secretary	14,928.00	
3. Assistant	10,560.00	
Publication Department:—		
4. Assistant Secretary	14,928.00	
5. Assistant	10,560.00	
Statistical Department:—		
6. Assistant Secretary	14,335.00	
Hydrographical Department:—		
7. Hydrographer	22,174.00	
8. 1st Assistant	13,750.00	
9. Clerical Assistance	8,945.00	
10. Part-Time Assist. (P. Alnøe)	4,600.00	
11. Part-Time Assist. (I. Bondorff)	4,400.00	
		142,180.00
III. Office Expenses		45,450.00
IV. Travelling Expenses		32,200.00
V. Publications		106,600.00
VI. Pensions[1])		36,262.00
Estimated Excess of Income over Expenditure		17,925.50
		406,517.50

RECEIPT

	D. Kr.	D. Kr.
I. Contributions		
Belgium	20,000.00	
Denmark	20,000.00	
Finland	10,000.00	
France	40,000.00	
German Federal Republic	40,000.00	
Iceland	20,000.00	
Ireland	15,000.00	
Italy	10,000.00	
The Netherlands	20,000.00	
Norway	20,000.00	
Poland	20,000.00	
Portugal	15,000.00	
Spain	20,000.00	
Sweden	20,000.00	
United Kingdom	40,000.00	
U.S.S.R.	40,000.00	
		370,000.00
II. Interest		
On Bank Deposits	6,000.00	
On Investments	4,644.00	
On Pension Fund	4,873.50	
		15,517.50
III. Sale of Publications		20,000.00
IV. Contributions		
from Woods Hole Oceanographic Institution and Texas towards collecting and publishing American and Texan observations in *Bulletin Hydrographique*		1,000.00
		406,517.50

[1]) The difference between the amount of pensions and the sum of interest yielded by the Pension Fund will be paid as a subvention to the persons concerned.

List of Members of Committees

(One member only, from each country is entitled to vote)

Consultative Committee

Mr. R. S. WIMPENNY, Chairman,
Dr. Å. V. TÅNING,
Dr. J. HULT,
Dr. AA. J. C. JENSEN,
Dr. J. FURNESTIN,
Dr. C. E. LUCAS,
Mr. G. ROLLEFSEN,
Mr. OLAV AASEN,
Dr. JUAN CUESTA,
Dr. A. DE M. RAMALHO,
Dr. A. E. J. WENT,
Dr. H. A. COLE,
Dr. G. BÖHNECKE,
Prof. E. STEEMANN NIELSEN,
Dr. J. LUNDBECK,
Dr. N. A. MACKINTOSH,
Mr. J. R. LUMBY.

Editorial Committee

The Chairman of the Consultative Committee, the Editor of the *Journal du Conseil*, and the Secretary General

Distant Northern Seas Committee

Belgium:	Mr. CH. GILIS,	Iceland:	Mr. JÓN JÓNSSON,
Denmark:	**Dr. Å. V. TÅNING, Chairman,**	Ireland:	Dr. A. E. J. WENT,
	Dr. PAUL M. HANSEN,	Netherlands:	Dr. P. KORRINGA,
England:	Mr. R. J. H. BEVERTON,		Mr. L. K. BOEREMA,
	Mr. A. J. LEE,	Norway:	Dr. B. RASMUSSEN,
Finland:	Dr. I. HELA,		Mr. G. ROLLEFSEN,
France:	Dr. J. ANCELLIN,	Scotland:	Dr. C. E. LUCAS,
	Mr. CL. NÉDÉLEC,		Dr. B. B. RAE,
Germany:	Prof. A. BÜCKMANN,	U.S.S.R.:	Mr. G. K. IZHEVSKY,
	Dr. H. AURICH,		Mr. V. I. TRAVIN.

Near Northern Seas Committee

Belgium:	Dr. E. LELOUP,	Netherlands:	Dr. P. KORRINGA,
	Mr. CH. GILIS,		Mr. L. K. BOEREMA,
Denmark:	Dr. E. BERTELSEN,	Norway:	Mr. FINN DEVOLD,
	Dr. AA. J. C. JENSEN,		Mr. G. DANNEVIG,
England:	Mr. R. S. WIMPENNY,	Scotland:	Dr. H. WOOD,
	Mr. R. J. H. BEVERTON,		Dr. C. E. LUCAS,
France:	Dr. J. ANCELLIN,	Sweden:	**Dr. J. HULT, Chairman,**
	Mr. CL. NÉDÉLEC,		Dr. CHR. HESSLE,
Germany:	Dr. A. BÜCKMANN,	U.S.S.R.:	Mr. D. V. RADAKOV.
Ireland:	Dr. A. E. J. WENT,		

Baltic-Belt Seas Committee

Denmark:	**Dr. AA. J. C. JENSEN, Chairman,**	Poland:	Prof. W. CIEGLEWICZ,
	Mr. J. KNUDSEN,		Prof. K. DEMEL,
Finland:	Prof. ERKKI HALME,	Sweden:	Mr. G. OTTERLIND,
	Dr. S. SEGERSTRÅLE,		Dr. F. KOCZY,
Germany:	Prof. R. KÄNDLER,	U.S.S.R.:	Mme T. F. DEMENTJEVA,
	Prof. J. KREY,		Prof. P. G. BORISOV.

Atlantic Committee

Belgium:	Dr. E. Leloup,
	Mr. Ch. Gilis,
Denmark:	Dr. Å.V. Tåning,
	Dr. E. Bertelsen,
England:	Dr. D. H. Cushing,
	Dr. C. F. Hickling,
France:	**Dr. J. FURNESTIN, Chairman,**
	Mr. P. Desbrosses,
	Mr. R. Letaconnoux,
	Mr. L. Faure,
Germany:	Prof. A. Bückmann,
Ireland:	Dr. A. E. J. Went,
Poland:	Prof. K. Demel,
Portugal:	Dr. A. de M. Ramalho,
	Prof. F. Frade,
Scotland:	Dr. C. E. Lucas,
Spain:	Dr. F. Navarro,
	Dr. F. Cabañas Ruesgas,
	Prof. R. Montequi,
	Dr. N. Menendez,
	Dr. J. Cuesta,
U.S.S.R.:	Prof. T. S. Rass,
	Prof. P. A. Moiseev.

Comparative Fishing Committee

Belgium:	Mr. Ch. Gilis,
Denmark:	Dr. Aa. J. C. Jensen,
	Mr. K. Popp Madsen,
England:	Mr. A. R. Margetts,
	Mr. R. J. H. Beverton,
Finland:	Prof. Erkki Halme,
France:	Mr. R. Letaconnoux,
	Dr. J. Ancellin,
Germany:	Dr. A. von Brandt,
	Dr. J. Schärfe,
Iceland:	Mr. Aðalsteinn Sigurðsson,
Ireland:	Dr. A. E. J. Went,
Netherlands:	Dr. P. Korringa,
	Mr. L. K. Boerema,
Norway:	Mr. G. Sætersdal,
	Mr. G. Rollefsen,
Poland:	Prof. W. Cieglewicz,
Portugal:	Dr. A. de M. Ramalho,
Scotland:	**Dr. C. E. LUCAS, Chairman,**
	Mr. B. B. Parrish,
Spain:	Dr. J. M. Navaz y Sanz,
	Dr. Juan Cuesta,
	Dr. F. Cabañas Ruesgas,
Sweden:	Mr. S. I. K. Sörensen,
	Mr. G. Otterlind,
U.S.S.R.:	Mr. A. I. Treschev,
	Mr. K. E. Babajan.

Gadoid Fish Committee

Belgium:	Mr. Ch. Gilis,
Denmark:	Dr. Paul M. Hansen,
	Mr. J. S. Joensen,
England:	Mr. P. J. Woodhead,
	Mr. G. C. Trout,
France:	Mr. L. Faure,
	Dr. J. Ancellin,
Germany:	Dr. U. Schmidt,
	Dr. A. Kotthaus,
Iceland:	Mr. Jón Jónsson,
Ireland:	Dr. A. E. J. Went,
Netherlands:	Dr. P. Korringa,
	Mr. L. K. Boerema,
Norway:	**Mr. G. ROLLEFSEN, Chairman,**
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Poland:	Prof. Z. Mulicki,
Portugal:	Dr. A. de M. Ramalho,
Spain:	Dr. Juan Cuesta,
	Dr. F. Cabañas Ruesgas,
Scotland:	Dr. C. E. Lucas,
	Mr. R. Jones,
Sweden:	Mr. S. I. K. Sörensen,
	Mr. G. Otterlind,
U.S.S.R.:	Mr. N. A. Maslov,
	Prof. P. A. Moiseev.

Herring Committee

Belgium:	Mr. Ch. Gilis,
Denmark:	Dr. Å V. Tåning,
	Dr. Aa. J. C. Jensen,
England:	Dr. D. H. Cushing,
France:	Dr. J. Ancellin,
Germany:	Prof. A. Bückmann,
	Dr. K. Schubert,
Iceland:	Dr. H. Einarsson,
Ireland:	Mr. E. D. Toner,
Netherlands:	Mr. J. G. Zijlstra,
Norway:	**Mr. OLAV AASEN, Chairman,**
Poland:	Prof. W. Cieglewicz,
Scotland:	Mr. B. B. Parrish,
Sweden:	Dr. H. Höglund,
	Mr. G. Otterlind,
U.S.S.R.:	Dr. Ju. Ju. Marty,
	Mr. A. N. Svetovidov.

Hydrographical Consultant: Dr. J. B. Tait. Plankton Consultants: Dr. J. H. Fraser and Prof. T. Braarud.

Sardine Committee

Belgium:	Dr. E. Leloup,
	Mr. Ch. Gilis,
England:	Dr. D. H. Cushing,
France:	Dr. J. Furnestin,
	Mr. R. Letaconnoux,
	Mr. L. Faure,
Germany:	Dr. H. Aurich,
	Prof. A. Bückmann,
Ireland:	Dr. A. E. J. Went,
Norway:	Mr. G. Dannevig,
	Mr. K. Gundersen,
Portugal:	Dr. A. de M. Ramalho,
	Prof. F. Frade,
Scotland:	Dr. H. Wood,
	Mr. B. B. Parrish,
Spain:	**Dr. JUAN CUESTA, Chairman,**
	Dr. F. Lozano Cabo,
	Dr. M. Oliver.

Scombriform Fish Committee

Belgium:	Dr. E. Leloup,
	Mr. Ch. Gilis,
England:	Mr. A. C. Simpson,
France:	Mr. R. Letaconnoux,
	Mr. G. de la Tourrasse,
Germany:	Dr. P. F. Meyer-Waarden,
	Prof. R. Kändler,
Ireland:	Dr. A. E. J. Went,
Norway:	Mr. G. Dannevig,
	Mr. A. Revheim,
Portugal:	**Dr. A. de M. RAMALHO, Chairman,**
	Prof. F. Frade,
Scotland:	Mr. B. B. Parrish,
	Dr. H. Wood,
Spain:	Dr. J. M. Navaz y Sanz,
	Dr. F. Lozano Cabo,
Sweden:	Mr. S. I. K. Sörensen.

Salmon and Trout Committee

Denmark:	Mr. Knud Larsen,
England:	Mr. F. T. K. Pentelow,
	Mr. I. R. H. Allan,
Finland:	Prof. E. Halme,
France:	Mr. R. Vibert,
Germany:	Prof. R. Kändler,
	Dr. H. Mann,
Iceland:	Mr. T. Guðjonsson,
Ireland:	**Dr. A. E. J. WENT, Chairman,**
Netherlands:	Mr. G. J. Lienesch,
Norway:	Mr. L. Rosseland,
Poland:	Prof. W. Mańkowski,
Scotland:	Mr. K. A. Pyefinch,
Spain:	Dr. Juan Cuesta,
Sweden:	Dr. G. Alm,
	Dr. B. Carlin,
U.S.S.R.:	Mr. I. J. Lagunov,
	Prof. G. V. Nikolsky.

Shellfish Committee

Belgium:	Dr. E. Leloup,
	Mr. Ch. Gilis,
Denmark:	Mr. E. Ursin,
England:	**Dr. H. A. COLE, Chairman,**
	Mr. G. D. Waugh,
Finland:	Dr. S. Segerstråle,
France:	Mr. P. Desbrosses,
	Mr. P. Trochon,
Germany:	Dr. P. F. Meyer-Waarden,
	Dr. H. Mann,
Ireland:	Mr. F. A. Gibson,
Netherlands:	Dr. P. Korringa,
Norway:	Dr. B. Rasmussen,
Portugal:	Dr. H. Vilela,
Scotland:	Dr. C. E. Lucas,
	Dr. H. J. Thomas,
Spain:	Dr. J. M. Navaz y Sanz,
Sweden:	Dr. H. Höglund,
	Mr. S. Sahlin,
U.S.S.R.:	Prof. B. P. Manteufel.

Hydrographical Committee

Belgium:	Dr. E. Leloup,
	Mr. Ch. Gilis,
Denmark:	Mr. Helge Thomsen,
	Mr. F. Hermann,
England:	Mr. J. R. Lumby,
Finland:	Dr. I. Hela,
	Dr. F. Koroleff,
France:	Dr. J. Furnestin,
	Mr. P. Desbrosses,
Germany:	**Dr. G. BÖHNECKE, Chairman,**
	Dr. G. Dietrich,
Iceland:	Mr. U. Stefánsson,
	Dr. H. Einarsson,
Ireland:	Dr. A. E. J. Went,
Netherlands:	Prof. P. Groen,
Norway:	Dr. Jens Eggvin,
Portugal:	Dr. A. de M. Ramalho,
Scotland:	Dr. John B. Tait,
Spain:	Dr. Nicanor Menéndez,
	Commander Fernando Balén,
Sweden:	Dr. B. Kullenberg,
	Dr. N. G. Jerlov,
U.S.S.R.:	Mr. V. A. Lednev,
	Prof. N. N. Zubov.

Sub-Committees under the Hydrographical Committee

Sub-Committee on the Preparation of Mean Charts of the Salinity and Temperature of the Surface Layer

Mr. J. R. LUMBY, Chairman,
Dr. G. DIETRICH,
Prof. P. GROEN,
Mr. J. SMED.

Sub-Committee on the International Geophysical Year 1957—1958

Dr. G. BÖHNECKE, Chairman,
Dr. J. EGGVIN,
Mr. A. GOUGENHEIM,
Mr. J. R. LUMBY,
Mr. H. THOMSEN,
Mr. V. A. LEDNEV,
Dr. Å. V. TÅNING.

Sub-Committee on the Investigation of the Overflow of Sub-Arctic Water over the Greenland-Scotland Ridges

Dr. J. B. TAIT, Chairman,
Dr. G. DIETRICH,
Mr. F. HERMANN.

Sub-Committee for Considering the Possibilities of Collecting and Publishing Bathythermograph Data

Prof. P. GROEN, Chairman,
Dr. B. KULLENBERG,
Mr. U. STEFÁNSSON,
Mr. G. K. IZHEVSKY.

Sub-Committee for Considering Standard Methods for Salinity Determination

Mr. F. HERMANN, Chairman,
Dr. K. KALLE,
Dr. F. KOCZY,
Mr. W. D. MANIECE,
Mr. P. TCHERNIA.

Sub-Committee on the Co-ordination of Hydrographic Investigations in the Baltic

Prof. I. HELA, Chairman,
Dr. J. KREY,
Prof. B. KULLENBERG,
Mr. V. A. LEDNEV.

Plankton Committee

Belgium:	Dr. E. LELOUP,
Denmark:	Mr. J. GRØNTVED,
	Prof. E. STEEMANN NIELSEN, Chairman,
England:	Mr. F. S. RUSSELL,
	Mr. R. S. WIMPENNY,
Finland:	Prof. ERKKI HALME,
France:	Mr. L. MARTEIL,
Germany:	Prof. J. KREY,
	D. H. AURICH
Iceland:	Mr. I. HALLGRIMSSON,
Ireland:	Dr. A. E. J. WENT,
Netherlands:	Dr. P. KORRINGA,
Norway:	Prof. T. BRAARUD,
	Dr. KR. FR. WIBORG,
Poland:	Prof. W. MAŃKOWSKI,
Scotland:	Dr. J. H. FRASER,
Spain:	Dr. J. CUESTA,
	Dr. MARIA ALVARIÑO,
Sweden:	Dr. HANS HÖGLUND,
	Dr. N. G. JERLOV,
U.S.S.R.:	Prof. B. P. MANTEUFEL.

Whaling Committee

Dr. N. A. MACKINTOSH, Chairman,
Mr. M. TERRIN,
Dr. C. E. LUCAS,
Dr. Å. V. TÅNING,
Prof. J. T. RUUD,
Mr. G. J. LIENESCH,
Mr. JÓN JÓNSSON.

Statistical Committee

Belgium:	Mr. CH. GILIS,
Denmark:	Dr. AA. J. C. JENSEN,
England:	Mr. R. S. WIMPENNY,
	Mr. R. J. H. BEVERTON,
Finland:	Prof. E. HALME,
France:	Mr. A. ALLOY,
Germany:	**Prof. J. LUNDBECK, Chairman,**
Iceland:	Mr. D. ÓLAFSSON,
Ireland:	Dr. A. E. J. WENT,
Netherlands:	Mr. G. J. LIENESCH,
Norway:	Mr. A. ANGERMAN,
	Mr. JOHS. SELLÆG,
Poland:	Prof. W. CIEGLEWICZ,
Portugal:	Dr. A. DE M. RAMALHO,
Scotland:	Mr. B. B. PARRISH,
	Dr. C. E. LUCAS,
Spain:	Mr. M. RODRIGUEZ REY,
Sweden:	Mr. S. SAHLIN,
	Dr. CHR. HESSLE.
U.S.S.R.:	Prof. T. S. RASS,
	Mr. K. A. SMETANIN.

Finance Committee

Prof. H. U. SVERDRUP, Chairman,
Dr. E. LELOUP,
Dr. Å. V. TÅNING,
Mr. B. DINESEN,
Dr. J. CUESTA,
Dr. J. CLAUSSEN,
Prof. G. V. NIKOLSKY.

Liaison Committee

in Connexion with the Permanent Commission of the 1946 Fisheries Convention

The Chairman of the Consultative Committee, Chairman,
the Chairman of the Distant Northern Seas Committee,
the Chairman of the Near Northern Seas Committee,
the Chairman of the Atlantic Committee,
the Chairman of the Comparative Fishing Committee, and
the Chairman of the Gadoid Fish Committee.

Co-opted members for 1956/57:

Mr. R. J. H. BEVERTON,
Dr. A. VON BRANDT,
Mr. B. B. PARRISH.

List of Editors

Rapports et Procès-Verbaux	**The Secretary General.**
Annales Biologiques	**„**
Bulletin Statistique	**„**
Bulletin Hydrographique	**The Hydrographer.**
Journal du Conseil	**Lt.-Cdr. J. R. LUMBY.**
Fiches d'Identification du Zooplancton	**Dr. J. H. FRASER,** / **Dr. G. THORSON, Co-Editor.**

ENGLISH VERSION

Special Meeting on "Herring Races"

Convener: Prof. A. Bückmann; Reporter: Mr. B. B. Parrish

The following papers were read and discussed:—

*Ancellin, J.: "Considérations sur les harengs du Sud de la Mer du Nord et de la Manche orientale. (Résumé d'observations faites de 1946 à 1955)."

Baxter, I.: "The composition of the Minch herring stock".

Blaxter, J. H.: "The cranial osteology of the herring in racial investigations."

Blaxter, J. H.: "The racial problem in herring from the viewpoint of recent physiological, evolutionary, and genetical theory".

*Burd, A. C.: "The North Shields fishery, 1949—55".

*Bückmann, A. & Hempel, G.: "Some results of German investigations on herring larvae".

Cushing, D. H.: "Some changes in vertebral counts".

*Cushing, D. H.: "The Downs herring".

Dutt, S.: "Number of pectoral fin rays in the spring- and autumn-spawning herring of Kiel Bay".

Einarsson, H.: "The Icelandic herring and racial problems".

Friðriksson, Á.: "The tribes in the north coast herring of Iceland with special reference to the period 1948—1955".

Gilis, Ch.: "Recherches sur la biologie du hareng".

Jensen, Aa. J. C.: "Racial investigations on herring, especially on the adult herring in the Skagerak".

June, Fred C.: "Variations in meristic characters of young Atlantic menhaden, *Brevoortia tyrannus*".

Krefft, G.: "Counting of gill rakers as a method for morphological herring investigations".

Kändler, R. & Dutt, S.: "Fecundity of Baltic herring".

Marty, Ju. Ju.: "Race formation and marine herring races".

Parrish, B. B. & Sharman, D.: "Some remarks on methods used in herring racial investigations, with special reference to the study of otoliths".

*Popp Madsen, K.: "Meristic characters in the young herring of the Bløden Ground area".

*Popp Madsen, K.: "Stock composition of the young herring in the Bløden Ground area".

Popiel, J.: "The difference in biological groups of herring in the southern Baltic".

Postuma, K. H.: "On the distinction of herring races in the autumn- and winter-spawning herring of the North Sea and English Channel by means of the otoliths and an application of this method in tracing the offspring of the races along the continental coast of the North Sea".

*Richardson, I. D.: "Selection of representative samples in a herring fishery".

Schubert, K.: "Investigations on the values of l_1 in the North Sea bank herring".

*Wood, H.: "The race composition of the Clyde herring".

Zijlstra, J. J.: "On the spawning communities of the herring in the Southern North Sea and the English Channel (preliminary results)".

Østvedt, O. J.: "Some considerations on the homogeneity of the Atlanto-Scandian herring".

These papers, except those marked with an asterisk, will be published in *Rapports et Procès-Verbaux*, Vol. **143**.

Report and Recommendations of the Consultative Committee

Chairman: Mr. R. S. WIMPENNY

I. Proceedings

1. The Chairman opened the meeting by welcoming the members, especially the newly elected Chairmen, Mr. AASEN and Dr. COLE.

2. Programme of Proceedings.

The members were reminded of the need carefully to check the list of committee membership at the start of their meetings. As the joint meeting of the Baltic-Belt Seas and the Salmon and Trout Committees had been cancelled, the time stipulated for that meeting was given to Dr. LUCAS and Prof. STEEMANN NIELSEN who both needed it. The Secretary General announced that a lecture would be given by Dr. G. THORSON on Friday, 5. October, on: "Parallel level bottom animal communities and their 'balance' between predators and prey animals".

3. Reports of Committees.

The reports and recommendations of the several committees were discussed and passed at the second session of the Committee, the various chairmen outlining the proceedings and recommendations of their committees. Special interest was focused on the recommendations of the Comparative Fishing and the Herring Committees, those of the latter giving rise to an exhaustive discussion.

4. Proposal for Modification of Committee Procedure.

At the first meeting of the Committee a proposal for modification of the Council's committee arrangement had been submitted by Dr. HULT and Mr. WIMPENNY. It was agreed to set up a small *ad hoc* Committee consisting of Dr. HULT, Mr. ROLLEFSEN, and Dr. WENT, who should draft a memorandum based upon the reaction of committee members towards this proposal. The *ad hoc* Committee had held a number of discussions during the week, and in general it was found that the Area Committees were in favour of the suggested change, but committees concerned with scientific subjects were opposed to it. At the second session Recommendation 1 was carried.

5. Invitation from I.C.N.A.F.

At the first session an invitation from I.C.N.A.F. for the Council to send its Comparative Fishing Committee to Lisbon in May 1957 was considered. This contemplated the Comparative Fishing Committee taking part in a "7-day workshop on population dynamics and selectivity of fishing units" to follow the 1957 annual meeting of I.C.N.A.F. It was decided to remit this document to Dr. LUCAS for discussion in his Committee. At the second session Dr. LUCAS stressed the absolute necessity for his Committee to accept this invitation and Recommendation 6a was agreed. The Secretary General was charged with the duty of replying in the affirmative to I.C.N.A.F.'s invitation.

6. Mr. R. S. WIMPENNY was re-elected Chairman of the Consultative Committee.

II. Recommendations

1. Organization

The *ad hoc* Committee appointed to consider the memorandum by Dr. HULT and Mr. WIMPENNY was of the opinion that changes in the arrangement of the activities of the committees of the Council should only be made after very careful consideration. It was decided that proposals from members of the Council should be sent, in triplicate, to Dr. WENT and that the question should be dealt with again at the next Council Meeting.

2. Publications

(a) It was decided that the papers presented at the meeting on "Herring Races" and at the special meeting on the "Southern North Sea Herring Fishery" should be printed in the series *Rapports et Procès-Verbaux*, in so far as they would not appear in national series. The papers should be edited by Dr. BÜCKMANN and Mr. AASEN respectively.

(b) It was agreed that an extension of the present *Synoptic Hydrographic Charts* should include the area of Kattegat, the Belts, and the western Baltic, the number of observations for an extension towards north and west being insufficient. The extension proposed would involve an additional cost of about kr. 600 per annum.

(c) It was resolved that the statistical areas used in the I.C.N.A.F. organization should be illustrated in the *Bulletin Statistique* instead of the present chart of the Atlantic coast of North America.

3. Recommendations involving Immediate Action

(a) In accordance with the Recommendation 1 of the Herring Committee the attention of the Governments of the countries fishing in the southern North Sea was to be drawn to the concern and apprehension of the Council at the state of the stocks of herring therein.

(b) The need for detailed effort statistics concerning the herring fishery in the North Sea was emphasized. These statistics should, as far as possible, be broken down to small areas and months.

4. Records of Hydrographical Data

It was decided that extracts of bathythermograms received by the Service Hydrographique be put on punched cards. The yearly expenditure would amount to about kr. 300.

5. Special Meetings

(a) It was agreed that a meeting called for by the Baltic-Belt Seas Committee to discuss "Measures for improving the stock of demersal fish in the Baltic" should be held during the course of the next Council Meeting.

(b) It was decided that the Plankton Committee should hold a special meeting on "Measurements of primary production in the sea" for two days in advance of the Council Meeting. It was hoped that U.N.E.S.C.O. would make funds available to cover the expenditure in connexion with invitation of experts from U.S.A. and some other countries as well as for the cost of printing the papers presented at the meeting.

6. Intermediate Meetings

(a) The I.C.N.A.F. invitation for I.C.E.S. to hold a meeting of its Comparative Fishing Committee at Lisbon during the course of the "7-day workshop" in May—June 1957, was welcomed and accepted. In connexion with this meeting it was decided that an amount not exceeding kr. 5,000 should be made available by the Council for appropriate subsistence for the Chairman and 14 members of the Committee for 5 days.

(b) Following Recommendation 2 of the Herring Committee it was agreed that three experts nominated by this Committee should meet in Copenhagen as soon as possible and in any case before the end of 1956 in order to prepare detailed plans for a large-scale tagging experiment in the southern North Sea. It is expected that such a plan will involve participation and financial contributions by the interested Governments and that, as soon as possible, these Governments will be invited to send representatives to a special meeting, convened by the Secretary General, at which the question of participation will be discussed. This would involve an expenditure of kr. 2,000.

(c) It was agreed that a meeting of the Sub-Committee on the Preparation of Mean Charts of the Salinity and Temperature of the Surface Layer should be held either in Copenhagen or Hamburg as necessary in 1957. The estimated cost was to be about kr. 2,500.

Mr. Smed was co-opted as a member of the Sub-Committee.

Reports and Programmes of Committees

Distant Northern Seas Committee

Chairman: Dr. Å. Vedel Tåning

I. Proceedings

The Chairman welcomed the members and guests. The Administrative Report and the *Annales Biologiques* were adopted.

The Chairman reported briefly on the work in the Area; as regards the studies of environment he pointed out that both the plankton and the bottom investigations in the area were insufficiently considered in the reports of the various nations. Also the fish species next in importance to herring and cod ought to be dealt with in more detail than hitherto in this Committee (in particular redfish, halibut, plaice, and catfish). Some of the more general problems of the Area were mentioned shortly, especially climatic change and the effect on various stocks of fish of the protection introduced by altering the territorial limits in Faroe and Iceland waters. The Chairman stressed the importance of continuing the researches on these questions.

A draft submitted by the Consultative Committee on committee arrangement was considered and the scheme proposed by Dr. Hult and Mr. Wimpenny was thought satisfactory.

The long-term programme for northern areas was reviewed and discussed. After some discussion it was agreed that the recommendation below should be submitted to the Consultative Committee.

Dr. Å. Vedel Tåning was re-elected Chairman.

II. Communications

The following reports were submitted to the Committee and discussed:—

Steinar Olsen: "The determination of age in halibut and the age distribution of spawning halibut in north Norway 1956".

H. Einarsson: "Some remarks on the plaice off the east coast of Iceland".

U. Stefánsson: "Report on hydrographical and chemical work in Icelandic waters in May—June 1956".

A short communication on recent researches in Greenland waters was presented by Dr. P. M. Hansen, and the method of tagging redfish was discussed; some promising experiments were carried out in Greenland, Iceland, and Norway waters.

III. Programme of Work

The work at sea which several countries have planned for 1957 was shortly reviewed.

The details of the programmes of work at sea will be circulated in January 1957 by the Central Office.

Denmark: The "Dana", "Adolf Jensen", "Immanuel", and the new experimental cutter "Sujumut" will carry out research work in the area, with the assistance of chartered vessels.

England: Work continued, especially in the Barents Sea.

France: Programme to be announced later.

Germany: The "Anton Dohrn" will carry out research work as follows:— January: Iceland waters; coalfish and redfish. March and April: Denmark Strait; hydrographic work; redfish. July and August: Barents Sea; coalfish and redfish. November and December: Finnmark and the Lofotens; coalfish and redfish.

Bottom fauna investigations will be carried out in the whole region.

Iceland: Research work will be carried out from two research vessels and from chartered vessels in the Iceland and East Greenland area.

Norway: The "G. O. Sars" will carry out research work on herring, cod, coalfish, and plankton. The "Johan Hjort" will carry out tagging of cod, coalfish, and halibut. Plankton samplings. Two chartered vessels will carry out comparative fishing in the Barents Sea and in Greenland waters. A new research vessel is expected to be in commission in August or September.

Scotland: The "Explorer" will carry out research work on the Ireland plateau and between Iceland and East Greenland.

U.S.S.R.: Two research vessels "Professor Mesjatzev" and "Academic Berg" will carry out research in the Barents Sea and in the Norwegian Sea on cod, haddock, redfish, and saithe. Furthermore two surveying trawlers "Russia" and "Swerdtowsk" will operate in the area.

IV. Recommendation

The Distant Northern Seas Committee recommends that the several Subject Committees be asked to redraft the priority programme of their subject with respect to the areas concerned.

Near Northern Seas Committee

Chairman: Dr. J. Hult

I. Proceedings

The Chairman opened the meeting by welcoming the members and guests and he especially welcomed the representatives of the two new member countries, Poland and U.S.S.R.

The list of members was checked.

The Administrative Report and the *Annales Biologiques* were adopted.

At the request of the Consultative Committee the arrangement of committees was discussed and the majority of the Committee was in favour of the new proposal.

The recommendation of 1955 that the several countries should provide all their statistics on whiting catches had been followed by all countries concerned. The Committee asked Dr. Aa. J. C. Jensen to prepare a summary report on the material available and forward it to members.

Dr. J. Hult was re-elected Chairman.

II. Communications

The following papers were presented and discussed by the Committee:—

L. Birkett: "A note on the distribution of the benthos of the Dogger Bank".

R. S. Wimpenny: "Young plaice samples from the English coast".

Hj. Bohl: "On the biology of the dab in the North Sea".

J. Messtorff: "On the biology of the whiting in the North Sea".

E. Bertelsen: "Danish whiting taggings in 1956".

J. Lundbeck & D. Sahrhage: "An estimate on the destruction of undersized haddock by German steam herring trawlers".

III. Programme of Work

Reports of the work done by each country during the year were given. Provisional research programmes were available for some countries and the representatives for the remainder of the countries promised to send in copies of their programmes, as soon as possible, to the Chairman, for distribution to members of the Committee.

The Committee's long-term programme was again discussed and it was agreed to postpone a decision until the question of arrangement of committees was settled.

Baltic-Belt Seas Committee

Chairman: Dr. Aa. J. C. Jensen

I. Proceedings

The Chairman welcomed members and guests. At this meeting Professor I. Hela represented Finland instead of Dr. S. Segerstråle.

The current investigations were reported and discussed. The plans for 1957 were considered with regard to investigational co-operation.

Standard gears were discussed. Some details of the Hensen net and the ring-net should be examined before the 1957 meeting.

Advance copies of the Administrative Report and the *Annales Biologiques* were submitted to contributors for corrections and amendments.

The proposal by Messrs Hult and Wimpenny of arrangement of committees was discussed. The proposal was unanimously agreed especially owing to the area being considered a biological unity.

Dr. Aage J. C. Jensen was re-elected Chairman.

II. Communications

The following paper and items 1 and 2 were discussed:—

T. F. Dementjeva: "Méthodes d'observations de la survie des poissons aux stades précoces (sur l'exemple de l'anchois et du strömling)".

1. The minimum size-limits for fish and other measures for improving the yield of the fisheries in the Baltic—in view of a possible renewed International Convention.

It was agreed that a thorough working-up of all material available and collection of various new material (see Programme of Work) was necessary for making a scientifically based statement of what measures must be recommended; relevant information should be circulated before next year's ordinary meeting. It was evident that this large and important question could not be adequately dealt with in an ordinary meeting, and the recommendation was therefore agreed.

2. The possible explanation of the extraordinary biological conditions in the Baltic in 1956, especially of the low fat content of the herring in the Bornholm region, was discussed.

III. Programme of Work

The previous year's programme should be continued, but special stress should be laid upon the investigations necessary for answering the question of the best measures for improving the fish stocks, viz., market measurements and determination of growth-rate and of natural and fishing mortality by quantitative and qualitative fishing and by marking experiments.

IV. Recommendation

The Committee recommends that a special meeting for the discussion of measures for improving the stock of demersal fish in the Baltic should be held two days in advance, or, if convenient, during the course of the main meeting of I.C.E.S in 1957.

Atlantic Committee

Chairman: Dr. J. Furnestin

I. Proceedings

The members of the Committee were all present except those of Great Britain and the U.S.S.R.

The list of members was checked, the Administrative Report adopted, the *Annales Biologiques* corrected, and the communications announced.

The proposal of modification of the Statutes of the Council, submitted by Messrs Hult and Wimpenny, was unanimously adopted.

Dr. J. Furnestin was re-elected Chairman.

II. Communications

P. Desbrosses: "Résultats préliminaires de la campagne 1956 du navire océanographique 'Président-Théodore-Tissier', première partie".

R. Letaconnoux: "Résultats préliminaires de la campagne 1956 du navire océanographique 'Président-Théodore-Tissier', deuxième partie."

J. Ancellin: "Résultats préliminaires de la campagne 1956 du navire océanographique 'Président-Théodore-Tissier', troisième partie."

R. Gravier: "Les 'loups' des côtes atlantiques du Maroc (*Marone* sp.)."

J. Dardignac: "Les ombrines des côtes atlantiques du Maroc."

R. Coupé: "Quelques données sur la biologie du *Dentex macrophtalmus* (C.-V.) des côtes atlantiques marocaines."

R. Moal: "Nouvelles observations sur la courbine (*Sciaena aquila* Lacép.) en Mauritanie."

III. Various Considerations and Programme of Work

It was agreed that the pelagic and littoral species which might have migrated to other regions of the Atlantic Committee's area during the last 20 years, or might recently have appeared there, should be studied during 1957. The lists of new species should be arranged by sectors.

The overseas colony of Portugal (São Tomé and Principe) will study the hydrography of the Bay of Guinea and will continue to collect and determine the fishes of this zone.

Spain is considering the organization of a cruise of the "Zauen" along the coast of Galicia, and Germany one between the Bay of Biscay and Lisbon.

France will study the mackerel (biology and ecology) in the Western Approaches and complete the hydrography and the evaluation of the resources of food fish of the deep waters along the Continental Shelf between the Bay of Biscay and the Porcupines.

Comparative Fishing Committee

Chairman: Dr. C. E. Lucas

I. Proceedings

In welcoming the members of the Committee and observers, the Chairman made special reference to the newly appointed representatives of the U.S.S.R. and Poland. All countries were represented except the Netherlands. It was decided that any changes in membership should be intimated to the Chairman before 20. October.

The Administrative Report for 1955 was on the table and was accepted as a satisfactory record: the Chairman thanked all those responsible for their help in compiling it.

The Committee was reminded of the extensive list of projects, ranging from standardization of fishing effort to compiling selectivity factors, which had been set before it by the Council and, through the Council, by the Permanent Commission of the Fisheries Convention, 1946. Details of these had been circulated to all countries and they may be summarized as follows:—

(a) Comparative estimates of fishing effort.
(b) Definition of light trawl.
(c) Specification of mesh gauge.
(d) Definition of materials and processes.
(e) Selectivity data.
    i) Single and double manila and sisal; trawl; cod and hake.
    ii) Single and double cotton and hemp; trawl and seine; all species.
    iii) Single and double synthetic fibres; trawl and seine; all species.
    (For near and distant waters as relevant, but data are particularly required for North Sea cod and distant water cod, haddock, and redfish, all for trawls.)
(f) Effects of factors other than mesh and material on selectivity (e.g., power, flow, net shape, etc.).

A number of the papers mentioned below contribute to the data required. Further information, however, is required at the first possible date, and the Chairman stressed the importance of all countries striving to contribute even more than previously to the common pool of knowledge for the Council's area.

These requirements assumed further importance in relation to the invitation from I.C.N.A.F. for the Council to arrange that this Committee should meet at Lisbon in May—June, 1957, on the occasion of the "7-day Workshop on Population Dynamics and Selectivity of Fishing Units (Craft and Gear)", which has been arranged to follow the 1957 Annual Meeting of the Commission. F.A.O. had also been invited to collaborate. The Committee welcomed this invitation in principle, but there was considerable discussion as to the best way in which the Council might be recommended to collaborate, bearing in mind the undoubted community of interest with I.C.N.A.F. on these two subjects, as well as that of standardizing fishing effort, suggested by F.A.O. as a third item for joint discussion. It was unanimously felt that, should the Council accept the invitation, attention must be focused on immediate objectives of the Committee's work, while so arranging the Comparative Fishing Committee meeting that it contributed also to the broader objectives of the joint meeting. It was also felt that such an occasion might present opportunities for preliminary discussion with the Research and Statistics Committee of I.C.N.A.F., of common interests such as minimum mesh size and methods of mesh measurement in the North Atlantic. Finally, Recommendation 1 was approved for submission to the Consultative Committee.

Programmes of work for 1957 were also discussed in the light of the proposed Special Meeting in May, it being emphasized that these would have to allow for contributions to it as well as to the statutory meeting in October 1957. Arrangements were made for exchange of these programmes as soon as they were completed, in order to prevent overlap and to permit co-operation where suitable.

The Committee had before it papers from the Consultative Committee, concerning a possible modi-

fication of the recent system of reporting. Since the proposals did not affect the practice of this Committee it was decided to make no special comments on them.

The meeting was again fortunate in having Dr. KRISTJÓNSSON of F.A.O., to give a further account of the plans made for the F.A.O. Gear Congress expected to take place in Hamburg between 7. and 12. October 1957. A draft syllabus had been drawn up and circulated with an approach letter to a large number of interested firms and scientists as well as the trade press in all parts of the world. The preliminary response to this had been very satisfactory and it was expected that there would be many contributions and a large attendance at the Congress. Both Dr. KRISTJÓNSSON and the Chairman urged members of the Committee to ensure that the aims and programme of the Congress became well and widely understood in their countries, so that the relevant contributions may be obtained and a good representation ensured.

Dr. C. E. LUCAS was re-elected Chairman.

II. Contributions

Thirteen contributions were provided, grouped as follows:—

(a) *On measurements in relation to trawls.*

J. N. CARRUTHERS: Demonstration of current instruments.

J. SCHÄRFE: "Telemetering depth-meter for pelagic trawls."

(b) *On fishing methods.*

A. I. TRESHCHEV: "Stern trawling in the U.S.S.R."

P. G. BORISOV: "Experimental and commercial fishing in the U.S.S.R. with the help of electric light".

(c) *On the effects of wetting on twines.*

G. KLUST: "Changes in length of net twines by water."

G. KLUST: "Changes in diameter of net twines by water."

(d) *On mesh selection and related matter.*

A. R. MARGETTS & R. J. H. BEVERTON: "Effect of cod-end meshes on the working characters of trawls."

A. R. MARGETTS & R. J. H. BEVERTON: "The length girth relation in whiting and cod and their application to mesh selection".

I. D. RICHARDSON: "Selection in drift nets."

A. VON BRANDT: "Selectivity of manila and 'perlon' cod-ends."

A. R. MARGETTS: "A mesh experiment with sisal, cotton and nylon cod-ends."

R. J. H. BEVERTON: "Mesh selection of North Sea cod and Arctic haddock."

W. CIEGLEWICZ: "A new type of mesh gauge".

The last group of papers provided valuable accounts of work in progress over the field of mesh selection and the Chairman asked specifically that these and any further contributions should be taken into account when the Committee next met, perhaps at Lisbon. Subsequently the meeting was shown a most interesting film dealing with Professor BORISOV's work on the attraction of fish by light, with illustrations of commercial methods. In conclusion the Chairman thanked all those who had contributed and taken part in the discussion.

III. Recommendations

It was recommended that:—

1. (a) The I.C.N.A.F. invitation for I.C.E.S. to hold a meeting of its Comparative Fishing Committee at Lisbon during the course of the "7-day Workshop" in May—June 1957, should be welcomed and accepted.

(b) For this Special Meeting, papers should be invited by the Chairman on subjects remitted to it by the Council and, through the Council, by the Permanent Commission, with special reference to Assessment of Fishing Effort and its Standardization.

(c) The Special Meeting should take note of progress made by the other Working Parties at Lisbon, with particular reference to the Committee's tasks summarized above. It should report on this and its own proceedings to the Council Meeting in October (or, if appropriate, earlier to the Liaison Committee).

(d) Its members and contributors should, whenever possible, contribute to discussions in other working groups.

Gadoid Fish Committee

Chairman: Mr. G. Rollefsen

I. Proceedings

In the list of members which now included representatives from U.S.S.R. and Poland there were only two alterations. The English member will be Mr. P. J. Woodhead instead of Mr. Birkett, and Dr. A. Kotthaus will represent the German Federal Republic instead of Dr. U. Schmidt.

The Administrative Report and the *Annales Biologiques* 1955 were presented and adopted.

The majority of the Committee were in favour of the Hult-Wimpenny scheme.

Mr. G. Rollefsen was re-elected Chairman.

II. Communications

J. A. Gulland: "The English hake fishery with particular reference to the effect of fishing on the stock".

Steinar Olsen: "The Norwegian coalfish investigations; growth of immature fish and tagging experiments".

Jón Jónsson: "Some recent investigations on the Icelandic stock of haddock".

N. A. Maslov: "Some results of Soviet investigations into the biology of gadoid fish in the Barents Sea in recent years".

III. Programme of Work

The reports given from each member country showed that their research programmes in general followed the lines drawn up earlier. It is, however, of interest to emphasize that the investigations are directed to a very high degree towards problems in connexion with population dynamics.

IV. Considerations

The Committee wants to draw the attention of the Liaison Committee to the papers presented at the meeting. In particular Mr. Gulland's contribution on hake, which has a direct bearing on problems under consideration in the Permanent Commission.

The Committee also wishes to draw the attention of the Liaison and the Statistical Committees to the desirability of estimates of the value of the various size categories of fish species of economic importance.

V. Recommendations

As research vessels from a number of nations are now operating simultaneously in the same areas and, as their general programmes have very much the same objectives, the Committee in acknowledgement of the value of co-operation recommends that:—

1. Cruise programmes should allow the research vessels to meet in appropriate places for exchange of views and results.

2. The actual research workers should be given opportunities, also in between I.C.E.S. meetings, to discuss with colleagues from other countries programmes of work, standardization of methods, etc.

Herring Committee

In the Chair: Mr. O. Aasen

I. Proceedings

The list of members was checked and certain amendments were made. The Administrative Report and the *Annales Biologiques* were presented and adopted. During the proceedings the members outlined their programme of work for the coming year.

A meeting on "Herring Races" was convened by Professor Bückmann on 25.—27. September. A special meeting on "Herring of the Southern North Sea" was held on 28. September. In order to deal with some specific problems raised during the latter meeting two *ad hoc* Committees were established:—

(a) Southern North Sea. To draft a programme of work for international co-operation to investigate herring stocks in the North Sea. The Herring Committee appointed the members of the *ad hoc* Committee to work out the detailed programme (see below).

(b) Northern Waters. To draft a proposal for widening the scope of herring investigations in northern waters (see below).

The proposed committee arrangements were considered and the following resolution was agreed:—

"The present system of reporting is satisfactory although the Herring Committee is aware that the system of reporting must be in accordance with the Statutes of the Council".

Mr. Olav Aasen was elected Chairman.

II. Communications

The following papers were read and discussed during the meeting:—

J. Ancellin: "Considérations sur les harengs du Sud de la Mer du Nord".

J. Zijlstra: "The catch per unit of effort of the Dutch drift-net fisheries in different regions of the North Sea in the period 1947—1955".

B. B. Parrish & R. E. Craig: "Recent changes in the North Sea herring fisheries".

Min. Agric. Fish. and Food: "On the herring of the Southern North Sea", summarized by Dr. D. H. Cushing.

Olav Aasen: "Some recent Norwegian herring investigations".

Ch. Gilis: "Evolution dans le temps et dans l'espace de la composition des concentrations de harengs exploitées par les pêcheurs belges dans la Mer du Nord au cours de la période 1951—1955".

Ju. Ju. Marty: "Peculiarities of the herring fishery in the Barents and Norwegian Seas".

G. Nikolsky: "Perspectives of a new herring fishing area".

Á. Friðriksson: "Recent herring research on the north coast of Iceland".

J. Ancellin: Remarks on the French Fishery Atlas of the North Sea.

III. Recommendations

1. Southern North Sea.

(a) This Committee views with concern and apprehension the present state of the stocks in the Southern North Sea Herring Fishery.

(b) This Committee wishes to draw the attention of member Governments to this concern and would urge all interested countries to co-operate in a co-ordinated programme designed to determine the relative magnitudes of the various factors affecting the yield from the Southern North Sea and indeed all other North Sea Herring Fisheries. They have particularly in mind the urgent need for adequate effort statistics from all countries, together with an intensive tagging programme.

2. Referring to Recommendation 1, the Herring Committee asks the Council to cover expenses in connexion with the meeting of the three experts in Copenhagen for 5 days before the end of 1956.

3. Northern Waters. The Herring Committee recommends that the scope of co-operation in herring research in northern waters should be enlarged.

4. The Herring Committee recommends that the papers presented at the Meeting on Herring Races and at the Meeting on the Southern North Sea Herring Fishery should be published in a special volume of the series *Rapports et Procès-Verbaux*, in so far as they will not appear in national series.

Programme proposed by the *ad hoc* Committee on the Southern North Sea

Members: O. Aasen, E. Bertelsen, D. H. Cushing

1. The *ad hoc* Committee considers that international co-operation can best be started by an intensive tagging programme on the Bløden Ground which is a vital area. The programme is directed at this nursery ground to find out the fishing mortality there and to determine the pattern of recruitment from this area to the adult fisheries.

2. The two problems, that of mortality and recruitment, can be elucidated by internal and external tagging experiments, respectively. To get the fish in good condition and to obtain quantitative results the Committee considers it necessary to use a purse seine as this is the best gear for the purpose.

3. The programme should be started in August 1957. The internal tagging experiments for mortality rates should follow the methods used by the Norwegians in their fat herring fishery. The external tagging experiments for recruitment and migration should follow the methods used in the Swedish herring investigations.

4. If the internal tagging experiments are to be successful it is essential that member countries take an inventory of their herring meal factories and see they are fitted with magnets under controlled conditions and tested for efficiency.

5. During the period of the experiment the statistics of catch and effort in small unit areas on the nursery ground must be recorded in detail; it goes without saying that catch and effort statistics are required all over the North Sea in small unit areas to elucidate the problem of migration.

6. *Finance.* In order to investigate the herring of the Bløden Ground it will be necessary to charter a suitable ship for one month, in the first instance, in 1957. An estimate of the expenditure for the charter of ship and cost of tagging material and rewards, comes to 200,000 kr. This sum should be borne equally by participating countries who should obtain approval in principle for the scheme as soon as possible. Each country's share will be approximately one-tenth of the total expenditure.

7. Conditional on acceptance three experts should be appointed by the Herring Committee to work out a detailed programme which should be referred back to the Herring Committee in due course.

Programme proposed by the *ad hoc* Committee on Northern Waters

Members: O. Aasen, Ju. Ju. Marty, H. Einarsson

The *ad hoc* Committee proposes that the field of co-operation should cover in the first phase:—

1. Detailed current exchanges of information about the 1953 herring year-class which according to Soviet investigations is a prospective important year-class.

2. It would be desirable if a combined tagging scheme on the Murman herring could be put into effect, employing the internal tag method.

3. The U.S.S.R. is invited to join the inter-scandinavian collaboration on hydrographical investigations and fish location to exchange data from the early summer cruises in northern waters.

Sardine Committee

Chairman: Dr. J. Cuesta

I. Proceedings

The Chairman opened the meeting by welcoming the members and also Mr. Holt, the F.A.O. observer.

1. Mr. L. Faure (France) and Dr. Lozano Cabo (Spain) were included in the list of members, the last-named replacing Mrs. M. G. de Navarro.

2. The Administrative Report and the *Annales Biologiques* were adopted.

3. An account of the work carried out during 1956 was made. Mr. Letaconnoux reported on the work done on sardine biology at La Rochelle, and Dr. Furnestin drew attention to three fisheries pilot-boats, equipped with echo-sounders, operating in three different regions, viz., St.-Jean-de-Luz, Sables d'Olonne, and Concarneau, a fact which had caused a considerable increase in the yield of the sardine fishery.

Professor Bückmann gave an account of the spring spawning of the sardine (quantitative estimation of eggs) in the southern North Sea, and Dr. Cushing reported on the cruise of the "Platessa" in spring in the region of Conway. Mr. G. Dannevig gave a review of the spawning places of the sprat in relation to the size of the stock and of the meristic characters of this species; Dr. Ramalho referred to the work, carried out in collaboration with Dr. Andreu (Spain), on the sexual cycle (histology) of the sardine as well as investigations on the composition of the stocks.

Dr. Furnestin notified the members that work carried out during the preceding year at Casablanca and Port-Etienne would be continued.

Finally Dr. Cuesta pointed out that the biometric investigations on anchovy and sardine carried out at the north coast of Spain and in the Canary Islands would be continued; the hydrographical observations in relation to the spawning of the two species in the Cantabrian Sea would be intensified.

4. Dr. Furnestin proposed to include the study of the shad in the programme for 1957. This was agreed.

5. It was decided to discuss the Hult-Wimpenny scheme in a joint meeting of the Atlantic, the Scombriform Fish, and the Sardine Committees.

6. Dr. J. Cuesta was re-elected Chairman.

II. Communications

R. Letaconnoux: "Les sardines pêchées en 1955 près de La Rochelle".

R. Moal: "La sardine de Mauritanie (*Sardinus pilchardus* Walb.). Etude de quelques charactères."

J. M. Navaz: "L'anchois de la côte Basque (1954—1956)".

J. Cuesta: "Conditions hydrologiques et ponte de la sardine et de l'anchois — côte Cantabrique 1956".

A. M. Ramalho: "Composition du produit de la pêche de la sardine au Portugal en 1954, 1955 et 1956 et tentative de prévision de pêche à court terme".

III. Programme of Work

The members agreed to continue, in 1957, the work in progress on the biology and meristic characters of the species attended to by the Committee, emphasizing the importance of studying the spawning of these species and the hydrographical conditions prevailing in the spawning and fishing localities.

Scombriform Fish Committee

Chairman: Dr. A. M. Ramalho

I. Proceedings

The list of members was corrected. The Administrative Report and the *Annales Biologiques* 1955 were presented and adopted.

The proposal for a modification of the committee arrangement, submitted by the Consultative Committee, was discussed. The Committee expressed its agreement.

Dr. A. M. Ramalho was re-elected Chairman.

II. Communications

Lozano Cabo: "Notes sur la biologie et la pêche des thons".

F. Frade: "Thunnidae et Cybiidae de S. Tomé et Principe".

R. Letaconnoux: "Carte de la pêche au germon (mois de juin)".

III. Programme of Work

To the programme adopted in 1955, the Committee added:—

Mackerel: Belgium. Study of the mackerel landed in the fishing ports of Belgium. Determination of length, weight, sex, maturity stage, fat content, and age.

Salmon and Trout Committee

Chairman: Dr. A. E. J. Went

I. Proceedings

The Chairman welcomed the members and guests. The list of members was checked and found to be correct. The Administrative Report for 1955 was discussed and approved. Members then gave outlines of the work in progress in 1956. The Committee expressed its appreciation of the kindness of Swedish colleagues in arranging an excursion, which proved to be both interesting and educational, to Laholm in Sweden on Sunday 30. September. The Committee also expressed its appreciation of the Swedish Migratory Fish Committee's action in arranging for Mr. H. Kallenberg to give an account of the work on "smoltification" now being carried out in Sweden.

The experimental transfer of ova of salmon and trout between member countries for scientific purposes, organization of researches into the food of the porpoise (*Phocaena phocaena*) and the factors affecting its abundance, diseases of pond-reared salmon and trout, fish passes in member countries, and proposals for rearrangement of the work of the Committee were also discussed and certain recommendations were approved. The Committee was of the opinion that the suggested change in the arrangements for the Salmon and Trout Committee as outlined by Messrs Hult and Wimpenny were undesirable and could lead to difficulties in the work of the Committee in future, if adopted in their entirety.

Dr. A. E. J. Went was re-elected Chairman.

II. Communications

1. Diseases of salmon and trout with particular reference to fish reared artificially.
   (a) I. W. Smith: "Account of work on salmonid diseases in Scotland, 1955—56".
   (b) Erich Tack: "On the extent, characteristics and probable causes of a dangerous, recently-epidemic disease of rainbow trout stocks in the pond cultures of Germany and a few neighbouring countries".
   (c) Dr. Besse: "L'anémie pernicieuse de la truite"
2. G. V. Nikolsky: "On investigations of salmonid fish in the eastern part of North Atlantic carried out in the U.S.S.R.".
3. H. Kallenberg: "Smolt transformation in salmon with special reference to carbohydrate metabolism and migratory behaviour".
4. F. Chrzan: "Results of investigations on salmon and trout in Polish fisheries".
5. G. Alm: "Notes regarding the salmon fisheries in the Baltic in recent years".
6. R. Kändler: "The present situation of the German salmon fishery in the Baltic".
7. S. Zárnecki: "Winter and summer races in the salmon and sea trout of the Vistula River".
8. Dr. Skrochowski: "The migration of sea trout smolts of the Vistula River".
9. B. Carlin gave an account of smolt tagging in the Baltic.

10. A. E. J. Went: "The origin of salmon caught in drift nets along the Donegal coast of Ireland".
11. C. J. Kerswill gave a brief account of the researches on salmon on the east (Atlantic) coast of Canada.

III. Programme of Work

The Committee decided to continue work on the tagging of salmon and sea trout in all stages and, where possible, to compare the results obtained by using tags of different types.

IV. Recommendations

The Committee approved of the following recommendations, namely:—

(a) Data relating to the appearances of disease in pond-reared fish should be made available from time to time at meetings of the Committee.

(b) Member countries should be encouraged to exchange ova of salmon and trout for the purpose of scientific investigations.

(c) Members should be asked to furnish full details of all fish passes for salmon and trout erected within their respective countries with a view to considering the advisability of preparing a handbook on this subject.

(d) Member countries should be asked to investigate the food of the porpoise (*P. phocaena*) in the Baltic, together with the factors governing its abundance in different years.

Shellfish Committee

In the Chair: Dr. H. A. Cole

I. Proceedings

Dr. Cole announced that at the request of the President he had acted for Dr. Havinga in the Consultative Committee, Dr. Havinga being prevented by illness from attending the Committee.

It was proposed by Ireland and seconded by Denmark that Dr. Cole should act as Chairman during the session.

A memorandum by Dr. Hult and Mr. Wimpenny proposing changes in committee procedure was considered. After much discussion during which the special nature of the work done by shellfish scientists and the need for a Committee with full powers was repeatedly mentioned, the following resolution, proposed by France and seconded by Scotland was adopted without dissent:—

"The Committee is of the opinion that the proposals of Messrs Hult and Wimpenny are unsuitable as the species and subjects covered by the Shellfish Committee are common to many areas and therefore the proposed changes would make difficulties in implementing recommendations regarding shellfish".

The Administrative Report and the *Annales Biologiques* were adopted with minor corrections. It was suggested that in future the administrative report might be shortened.

By the unanimous wish of the Committee a telegram was sent to Dr. Havinga regretting his absence, wishing him a speedy recovery and thanking him for his outstanding services to the Committee.

Dr. H. A. Cole was elected Chairman for next year.

II. Sanitary Control

Dr. Cole reported on comparative studies of French and English methods proceeding at the Conway and Burnham-on-Crouch laboratories. Tests had been made of both water and shellfish. The French method had in general given lower counts than the British, generally in the ratio of about 1:1.5. The French method was in a state of evolution but up-to-date information had been supplied through the courtesy of M. Boury. The comparative tests were continuing and a further report would be rendered next year.

Dr. Höglund reported that a large number of cases of jaundice had been traced to the consumption of polluted oysters from a Swedish storage basin. In the discussion which followed it was disclosed that no previous case of jaundice attributable to oysters had been recorded. Dr. Höglund stated that in consequence of this outbreak Sweden would be instituting a system of sanitary control of shellfish.

III. Communications

B. Havinga: "The influence of the shrimp fishery (*Crangon vulgaris*) on the stock".
E. Smith: "Survey of investigations on West Greenland deep-sea prawns (*Pandalus borealis* L.)".
L. Marteil: "Prévision des émissions des larves chez *Ostrea edulis* L. en Bretagne-Sud".
P. Trochon: "La fixation en claires des larves de l'huître plate *Ostrea edulis*".
L. Faure: "Essai de repeuplement en homards d'une région de la côte bretonne".
P. Lubet: "Action des stimuli externes sur l'émission des gamètes chez *Mytilus edulis* L.".
R. H. Baird: "Some notes on the swimming behaviour of escallops (*Pecten maximus* L.)".
H. Mason: "*Nicothoë astaci* Audouin and Milne Edwards on the gills of Orkney lobsters".

Following the consideration of Mr. Mason's communication it was suggested that members should seek further information regarding the occurrence and effect of the lobster parasite, *Nicothoë*, and should report to the next meeting.

Hydrographical Committee

Chairman: Dr. G. Böhnecke

I. Proceedings

The list of members was checked. There were no alterations in membership.

The Committee's Administrative Report for 1955 was distributed.

The Hydrographer reported on the work carried out by the Service Hydrographique since the last meeting.

In connexion therewith the delay in publishing the *Bulletin Hydrographique* caused by difficulties in assembling the data was discussed. Cdr. Lumby and Dr. Tait stressed the importance of having all the data for a year collected in one volume, rather than publishing a main volume to save time and an appendix later. This view was agreed by the Committee.

Asked by the Chairman Dr. Lednev informed the Committee that the Russian hydrographic data collected after 1. January 1956, would be sent to the Council for publication.

An extension of the region embraced by the *Synoptic Hydrographic Charts* to the north and west had been considered, but was not found practicable, the available observations in the extended region being too few. On the other hand charts could be prepared for the area comprising Kattegat, Belts, and the western Baltic.

Rec. 1 was carried.

Cdr. Lumby reported on the work of the Advisory Sub-Committee on the Preparation of Mean Charts of Surface Salinity and Temperature.

On the proposal of the President, Prof. Sverdrup, the word "Advisory" in the name of the Sub-Committee was cancelled.

Rec. 2 was carried.

Mr. Hermann reported on the work of the Sub-Committee for Considering Standard Methods for Salinity Determination. It was regretted that a Wenner-bridge was not available.

In this connexion Dr. Carruthers drew attention to a modification of the Wenner-bridge under construction in the National Institute of Oceanography. Mr. Hermann was asked to contact the Institute concerning this new design.

The Chairman reported on the work of the Sub-Committee on the International Geophysical Year 1957—1958. The Sub-Committee had held a meeting where the present state of the programme for the investigations was discussed. A general willingness to co-operate was expressed. The new plans from U.S.S.R. and Spain were welcomed. They will give valuable supplements and extend the area hitherto considered. In addition to these plans minor alterations were announced. Thus, if two ships worked in the same area at the same time it would be preferable to shift some of the sections in such a way that a system of equidistant sections were run. If the ships are working in the area at different times identical sections should be chosen.

A chart containing the entire programme as far as will be known will be distributed before the next meeting.

Prof. Groen reported on the work of the Sub-Committee for Considering the Possibilities of Collecting and Publishing Bathythermograph Data.

The President thought that while it would be most desirable to request that extracts of the bathythermograms be sent to the Service Hydrographique for filing, he considered it of little value to send reproductions only.

Dr. Lednev thought it better to publish the temperatures read from the bathythermograms instead of just filing them.

The Committee, having considered the consequences, with regard to costs and labour, of printing extracts of the bathythermograms, submitted Rec. 3.

The Chairman initiated a discussion on the study of the overflow of sub-Arctic water over the ridges between Greenland and Scotland.

After the reading of papers, a meeting was held of those interested in the practical investigation of the problem of the overflow of sub-Arctic water over the Greenland-Scotland Ridges. The following countries were represented: Denmark, Finland, Germany, Iceland, Norway, Scotland, Sweden, and the U.S.S.R. After discussion a Sub-Committee consisting of Messrs Dietrich, Hermann, and Tait (Chairman) was appointed to formulate draft plans for the investigation of this problem, and to distribute plans as soon as possible to all member states.

Preliminary discussions between Finland, Germany, Sweden, and U.S.S.R. on the co-ordination of hydrographical investigations in the Baltic having taken place in Copenhagen during the meeting of the I.C.E.S., the Hydrographical Committee recommended that detailed plans be settled at a meeting of the interested parties in Helsinki on a suitable date in March 1957.

For this purpose a Sub-Committee consisting of Messrs Hela (Chairman), Krey, Kullenberg, and Lednev was appointed.

Provisional programmes for hydrographic work by the various countries were tabled, as was also a survey of routine observations carried out along fixed lines or at fixed stations by research and commercial vessels, lightships, etc.

The Chairman drew attention to the question of "Committee Arrangement", as discussed in the Consultative Committee.

Dr. Böhnecke was unanimously re-elected Chairman.

II. Communications

The following lectures were given:—

J. N. Carruthers: "Some simple new instrumentation for the observation of currents, waves and wire angle". Messrs Lumby, Kullenberg, and Sverdrup took part in the discussion.

F. Hermann: "Influence of overflow over the Scotland-Greenland Ridge on the bottom water of the northern North Atlantic".

G. Dietrich: "On fluctuations of deep-sea circulation in the northern North Atlantic Ocean".

In the discussion after these two papers took part Messrs Groen, Sverdrup, Richards, Tait, and the Chairman.

U. Stefánsson: "The Siglufjörður section. Preliminary report on serial chemical and hydrographical investigations". Messrs Carruthers, Hermann, Lumby, Orr, Dietrich, and the Chairman took part in the discussion.

L. van Meel: "Le milieu marin au bateau-phare 'West-Hinder'". (Presented by the Hydrographer).

W. Krauss: "Some remarks on recent charts relating to the distribution of temperature, salinity, and density at the surface of the northern North Atlantic Ocean". Cdr. Lumby took part in the discussion.

F. Koczy: "The distribution of radioactive elements in the ocean". Messrs Sverdrup, Dietrich, and the Chairman took part in the discussion.

J. Eggvin: "A bank discovered between Jan Mayen and Greenland and the water around it". Messrs Dietrich, Richards, and the Chairman took part in the discussion.

III. Recommendations

1. The Hydrographical Committee recommends an extension of the present *Synoptic Hydrographic Charts* to include the area of Kattegat, the Belts, and the western Baltic, the number of observations for an extension towards north and west being insufficient. The extension proposed will involve an additional cost of about 600 kr. per annum.

2. The Hydrographical Committee recommends that:—

(a) Mr. Smed be co-opted as a member of the Sub-Committee for the Preparation of the Mean Charts.

(b) A meeting of the Sub-Committee should be held either in Copenhagen or Hamburg as necessary in 1957. The estimated cost is about 2,500 kr.

3. The Hydrographical Committee recommends that:—

(a) Member countries be invited to send to the Service Hydrographique not only lists of places and times of bathythermograph observations that are on record in each country, but also copies of extracts of bathythermograms. Extracts should be accompanied by the corresponding log sheets and should be presented on standard forms.

(b) Lists of places and times of bathythermograph observations be published in the *Bulletin Hydrographique* in such a way that it is shown whether an extract of any particular observation is available at the Service Hydrographique or not. In the latter case reference should be made in the *Bulletin Hydrographique* to the institution possessing the observation.

(c) Extracts of bathythermograms received by the Service Hydrographique be put on punched cards. The yearly expenses are estimated at about 300 kr.

(d) Until further details of the project especially with regard to the standard forms of the extracts will have been worked out and accepted by the Council, member countries should continue to send data of places and times of bathythermograph observations in the present way.

Plankton Committee

Chairman: Prof. E. Steemann Nielsen

I. Proceedings

The Chairman expressed the deep regret of the Committee at the death of Dr. Rees.

The list of members was checked. The reports on work done in 1955 were adopted. A report from Dr. Fraser about the progress in publishing the Plankton Identification Sheets was presented by Dr. G. Thorson.

A plan was discussed of having a special meeting on "Measurements of Primary Production in the Sea" arranged in connexion with the Council meeting in 1957.

A plan of publishing Plankton Monographs was presented by Professor J. Krey. It was decided that the plan should be considered by Professor Braarud, Professor Krey, and the Chairman before the meeting in 1957.

Professor E. Steemann Nielsen was re-elected Chairman.

II. Communications

The following papers were read:—

P. M. J. Woodhead & J. D. Riley: "Separation of sexes of *Calanus finmarchicus* in the fifth copepodite stage."

K. Banse: "On the behaviour of copepods in the stratified waters in the Bight of Kiel."
A. P. Orr & S. Marshall: "Seasonal changes in the respiration of copepods."
J. Grøntved: "Investigations on the productivity of the microscopic bottom vegetation."
N. Jerlov: "A method of quick determination of the particle content in a water sample."
E. Steemann Nielsen & Vagn Hansen: "Measurements of the rates of gross production and net production by the carbon-14 technique."
I. Hallgrimsson: "A short cut method for estimating zooplankton composition while at sea."

III. Recommendation

The Plankton Committee requests to have a special meeting on "Measurements of Primary Production in the Sea" arranged in connexion with the Council meeting in 1957. The meeting should last for 2 (3) days (Friday and Saturday before the Council meeting).

Expenses in connexion with an invitation of specialists from countries which are not represented in the Council might be covered by a grant from U.N.E.S.C.O. A grant may be available from the same body towards the cost of publication.

Statistical Committee

Chairman: Dr. J. Lundbeck

I. Proceedings

The *Bulletin Statistique* for 1954 was presented. Special attention was paid to Table 7, which is a new table and contains information on effort. The table is based on information from 8 of the member countries.

A proposal from the Herring Committee recommending to break down the herring statistics of the North Sea to smaller areas and to months was considered and it was felt that material of that kind should be printed in the *Bulletin Statistique* due regard being taken to effort.

The question of introducing mechanically punched cards in co-operation with I.C.N.A.F. was discussed. It was found that the punched cards introduced last year were sufficiently effective for the needs of the Council for the time being but it might become necessary later to use the I.B.M. system I.C.N.A.F. is proposing.

The Secretary General was asked to contact the members of the Statistical Committee and ask them 1) if they considered it necessary to subdivide some of Council's statistical areas into smaller units, and 2) to consider especially a possible revision of boundaries of the statistical areas of I.C.E.S. in the I.C.N.A.F. area.

Dr. J. Lundbeck was re-elected Chairman.

II. Communication

J. Lundbeck: "Some examples of misleading possibilities in effort statistics."

III. Recommendations

1. The Committee recommends that the Council should request the Danish Foreign Office to approach those countries which have been unable to provide statistics relating to fishing effort and urge upon them the necessity of such returns being made available in as complete and exhaustive a manner as possible in the future. It is of great importance that these returns should be rendered to the Secretary General by the September following the year to which they relate.

2. The Statistical Committee is conscious of an urgent need for further catch and effort statistics for all species caught in the I.C.E.S. area, for each method of capture, subdivided by area and time intervals, and of the growing desirability of some standardization in collection, breakdown, and handling of statistics amongst different international organizations.

The Committee is of the opinion that, while at present the facilities for handling the statistical data are sufficient for the Council's needs, the growing volume of data and the need for standardization demand serious consideration of the question of introducing the use of mechanical sorting methods in the near future.

The Committee also feels that steps should be taken by the Council to discuss the question of standardization of classification and method of manipulation with other international organizations.

3. The Committee recommends that the statistical areas used in the I.C.N.A.F. organization should be illustrated in the *Bulletin Statistique* instead of the present chart of the Atlantic coast of North America.

APPENDIX

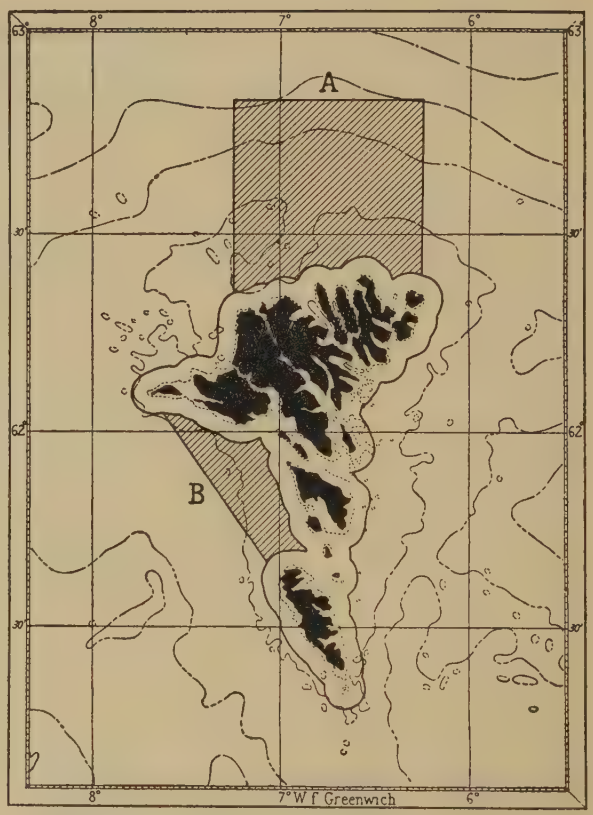
Report of the Sub-Committee on a Proposed Closure of Certain Extraterritorial Waters off the Faroes

By Å. Vedel Tåning

On 29. November 1937 the Danish delegates Professor M. Knudsen and Dr. H. Blegvad, on the behalf of the Government, forwarded a proposal to the International Council for the Exploration of the Sea for discussion at the annual meeting in Copenhagen in May 1938. The proposal, which originated from the Faroese fishery organizations related to the partial closure to trawling of the two regions north and west of the Faroes, consisting of a larger, northern area (A: bounded by latitude 62°50′ N., the longitudes of 6°15′ W. and 7°15′ W., and the territorial limit) and a smaller western area (B: bounded by latitude 62°02.7′ N., longitude 7°37′ W., and latitude 61°40′ N., longitude 7°04′ W., and the territorial limit). The areas should be closed to all trawling, but not to other forms of fishing, during the period 15. February to 15. May, that is, during the period in which the cod spawns. The Danish Ministry of Naval Affairs reported that Danish patrol vessels would be able to maintain a certain degree of control of the areas and prevent trawling during the period mentioned.

No investigations had been previously carried out to obtain, if possible, a biological basis for the proposal. It was clear, therefore, that the proposal was first and foremost an expression of the desires of the local fishing industry. The fishermen of the Faroes had earlier witnessed the decline of a local cod fishery, whilst at the same time the trawlers of other countries had been able to carry away annually (in the period 1922—1938) between 16 and 32 million kilogrammes of cod from the fishing grounds round the Faroes. This was largely due to the fact that the trawlers had a market for the smaller cod, whereas for their market the Faroese required the larger fish (for splitting and drying). These large cod gradually diminished in numbers to such an extent that the Faroese handlines, and to a lesser degree long-lines, could not be worked at a profit. This was another example of the old struggle between primitive methods and modern, more effective techniques, and it gave rise to the idea that the spawning stock should be protected. The cod spawning grounds off the Faroes lie outside the 3-mile limit, as they do in several other places in the North Atlantic.

After consideration by the Consultative Committee, the matter went to the North-Western Area Committee, which set up a Sub-Committee to deal with it,



The areas for which protection was proposed.

"The Sub-Committee on a proposed closure of certain extraterritorial waters off the Faroes". The membership of this Sub-Committee was as follows:— England, Mr. F. M. Davis and Mr. M. Graham; France, Dr. Ed. le Danois; Germany, Professor A. Hagmeier (failing him, Dr. J. Lundbeck); Holland, Dr. J. J. Tesch; Norway, Professor Johan Hjort; Scotland, Dr. R. S. Clark; Iceland, Mr. Árni Friðriksson; Denmark, Dr. Å. Vedel Tåning, who was elected Chairman of the Sub-Committee.

The Sub-Committee met on 25. May 1938 and it became clear from the discussions that the investigations needed before a decision could be reached would

take longer than one year. It was resolved that the work should take the following form (Rapp. et Proc.-Verb., **107** (1):29):—

A. A preliminary survey of the question to be issued by the Chairman for the benefit of the members of the Committee.

B. Inquiries on fishing in the areas to be made in the same manner as on the Faxa Bay question.

C. Investigations proposed to be carried out:—

(a) on the importance of the areas as spawning places of the cod,
(b) on the decrease in cod of the Faroe area during recent years,
(c) on the influence of the various fishing methods on the composition of the stock of cod in the areas,
(d) on the present intensity of the fishery inside and outside the specified areas,
(e) on the importance of the areas to the lemon sole fishery.

D. Information to be collected by Danish patrol vessels as to the number, nationality, etc. of fishing vessels working in the area.

The task of the Sub-Committee was to determine, on a biological-statistical basis, to what extent and in what way efforts should be made to preserve the stock of cod with a view to obtaining the optimal catch, due regard being had to the interests of all countries fishing the international waters of the region.

On 20. April 1939, the preliminary survey was issued by the Chairman. This gave a fairly exhaustive account of the natural conditions in Faroe waters, the marine fauna, etc., and summarized what had been learnt about the natural history of the cod in the area from the investigations already carried out since the beginning of the century. It also outlined the natural history of three other important species — haddock, halibut, and lemon sole. The fishing activities of the different nations in the area were described, and certain changes which had occurred in recent years were noted. Finally, a short account was given of the available statistics and the information obtained from questionnaires sent to all north European countries interested in the Faroese fisheries.

The Sub-Committee met again on 15. May 1939, during the Council meeting in Berlin. The Chairman's report was discussed, together with an account of the Scottish fishery at the Faroes, especially that for the lemon sole. A few months after the meeting in Berlin the outbreak of war interrupted the work. The Danish investigations of changes in the cod stock, their migrations, etc., in the Faroe region were continued a little longer, but communication with the Faroes was cut when Denmark was overrun, and the collection of data on the cod stock had to be given up.

During the war the Chairman published a report based on marking experiments, which dealt with the migration of the cod to and from the spawning grounds ("Migration of cod marked on the spawning places off the Faroes". *Medd. Komm. Danmarks Fisk.-og Havunders.*, Ser. Fiskeri, **10** (7):52, 1940).

After the war the Sub-Committee met again on 16. October 1945 during the Council meeting in Copenhagen. The composition of the Committee was altered somewhat and the various countries were represented as follows:— England, Mr. M. Graham; France, M. J. le Gall; Holland, Dr. B. Havinga; Norway, Mr. Finn Devold; Scotland, Dr. R. S. Clark; Iceland, Mr. Árni Friðriksson; Denmark, Dr. Å. Vedel Tåning. It was agreed that the collection of information should continue and that certain of the investigations proposed should be carried out as soon as circumstances permitted. These involved work both at sea and in the laboratory. In 1946 two new reports were published — Dr. B. B. Rae: "Review of the Scottish lemon sole fishery at Faroe with special reference to the years 1933 to 1938", and Dr. Å. Vedel Tåning: "Occurrence of fishing-vessels at the Faroes according to observations by patrol vessels".

At a meeting held on 15. August 1946 in Copenhagen, it was agreed to postpone decision on the matter for some years in view of the fact that circumstances had interfered with the work of collecting material and information and with the carrying out of the investigations; the mine fields north of the Faroes made the work particularly difficult. Moreover the fishery at the Faroes had undergone great changes during the war and after.

Subsequently the Sub-Committee met each year from 1947 to 1954 during the annual meetings of the International Council, and at these meetings the progress of the research work was discussed and reports were circulated and considered. In 1948 three reports were presented; (1) Michael Graham: "Interpretation of English fishery statistics"; (2) E. Bertelsen: "On the spawning grounds and spawning season of the cod at the Faroes"; and (3) E. Bertelsen: "On the fisheries statistics for 1937—1946". At the 1948 meeting the Chairman presented a "Progress Report" summarizing the results obtained so far, after consideration of which the Sub-Committee recommended (*Rapp. et Proc.-Verb.*, **124** (1): 37) that:—

(a) The Faroe Fisheries Organizations should be asked if they would be prepared in event of closure to sacrifice cod-fishing in a protected area limited by 62°35′ N., 6°30′ W., and the 3-mile limit, and for a short period, viz. 20. March to 20. April;

(b) the relation between the number of recruits entering the cod fishery in any one year and the size of the spawning stock producing those recruits should be investigated;

(c) statistics should be collected from all countries now concerned with fishing in Faroe waters regarding both the total catch and the catch per unit of gear. The aim of these and other provisions should be to investigate to what degree the Faroe stock of cod is exposed to overfishing and to what extent the variations in the yield are due to natural fluctuations;

(d) the ordinary routine work regarding the biology

of the cod stock and fluctuations in this stock should be continued in the pre-war way;

(e) the usefulness of introducing larger minimum sizes both of mesh of nets and of fish landed should be considered as a possible alternative to closure.

Research had shown that closing the smaller area to the north of the islands would protect a reasonable part of the population of spawning cod, and that the period mentioned (15. February—15. May) did in fact cover the main spawning season.

After the Faroese Fishermen's Association had assented to the proposition mentioned above (a), the Landsstyre (Executive Council) prohibited by an act of the Lagthing dated 28. March 1949 any fishing by Faroese vessels within the area north of the islands during the period from 20. March to 20. April, provided other nations similarly agreed to refrain from fishing there.

In 1951 the Laboratory for Fishery Research in the Faroes was erected and more elaborate investigations were begun in the area with special regard to the recommendations made by the Sub-Committee in 1948. Several reports were published (in the Council's publications) during the following years on the studies of the stocks of cod and other important fish. It was demonstrated *inter alia* that the cod's spawning grounds, both north and west of the islands had during recent years tended to be in somewhat deeper water than previously, the location of the main spawning ground now being to a great extent outside the areas it was proposed to close. The age composition of the cod stock and the spawning intensity, etc. were also studied, and in addition studies were made of the life histories of other species occurring in the areas considered, especially haddock, lemon sole, and halibut, attention being paid to their value to the fishery.

The following reports on investigations in the Faroe area were published (A.B. = *Annales Biologiques*):—

E. Bertelsen: On pelagic 0-group cod, haddock, coalfish and whiting. (A.B., **4**, 1947: 28—30; **5**, 1948: 30—31; **7**, 1950: 27—28; **8**, 1951: 36; **9**, 1952: 34).

R. S. Clark: On haddock. (A.B., **2**, 1942—45: 23).

J. S. Joensen: On the cod stock. (Rapp. et Proc.-Verb., **136**, 1954: 58—62; A.B., **11**, 1954: 90, 95—96).

J. S. Joensen: On the halibut. (Medd. Danmarks Fisk.- og Havunders., N.S., **1** (5), 1954: 1—25).

R. Jones: On haddock. (A.B., **7**, 1950: 28—31).

R. Jones & W. Main: On haddock. (A.B., **8**, 1951: 36—39; **9**, 1952: 35—38; **10**, 1953: 32—35; **11**, 1954: 101).

A. D. McIntyre: On halibut. (A.B., **6**, 1949: 37—38; **7**, 1950: 33; **8**, 1951: 40).

B. B. Parrish: On haddock. (A.B., **4**, 1947: 30—31).

B. B. Rae: On lemon sole. (A.B., **2**, 1942—45: 45; **3**, 1946: 24; **4**, 1947: 31—32; **5**, 1948: 31—32; **6**, 1949: 39—40; **7**, 1950: 32; **8**, 1951: 40; **9**, 1952: 38; **10**, 1952: 36).

A. Saville: On eggs and larvae. (A.B., **6**, 1949: 39; **7**, 1950: 26—27; **8**, 1951: 35; **9**, 1952: 33—34; **10**, 1953: 32).

Å. Vedel Tåning: On the cod stock. (A.B., **1**, 1939—41: 78—79).

Å. Vedel Tåning: On halibut. (A.B., **2**, 1942—45: 24).

At the final meeting of the Sub-Committee on 26. October 1955 in Copenhagen the following members and suppleants were present:—

Denmark: Dr. Å. Vedel Tåning, Dr. E. Bertelsen, and Mr. J. S. Joensen; France: M. Cl. Nédélec; Germany: Dr. A. Kotthaus and Dr. U. Schmidt; Iceland: Dr. Á. Friðriksson; Norway: Mr. G. Rollefsen; United Kingdom: Mr. R. S. Wimpenny and Dr. C. E. Lucas.

In considering the results obtained since the Committee was first appointed, the Committee took into account such new information as had been recently collected by Denmark and the United Kingdom.

As a result of the investigations it was agreed that a rich spawning stock of large cod with a high egg production was not unconditionally followed by rich year-classes, as shown, for instance, by the relatively scarce progeny of the rich 1947 year-class. Accordingly, the closure to trawling of some spawning grounds in the Faroe area was not scientifically justifiable as a remedy for the decrease in the stock of large cod. It seemed probable that an increase in the numbers of large cod could be obtained by other means, for instance, by mesh regulation. Although the total annual catch of cod from Faroe waters fluctuated from year to year, the average annual catch during the two periods 1919—28 (29,261 tons) and 1929—38 (28,821 tons) showed no decrease, and the average for 1952—54 was about 26,000 tons, with a lower fishing intensity than before the war. Moreover, the average catch per 100-hours trawling by English 1st-class steam-trawlers was 10·1 tons in 1930—38 and 16·2 tons in 1946—54. It was to be noted, however, that the cod enjoyed a certain measure of protection during the war, and that some of the trawlers operating after the war were larger than those fishing the region before the war. It was further stressed that the situation in the Faroe region had recently altered considerably, because an agreement had been reached between the English and Danish Governments on 22. April 1955 relating to Faroese territorial limits, which modify the old convention of 24. June 1901. Under this modification, since 1. July 1955 the original western cod spawning ground has been inside territorial limits. The codling were accordingly much more protected than before the war. It was agreed that this alteration would affect the cod stock appreciably, and that the effects of this protection should be carefully watched.

After having discussed recent information in relation to existing knowledge, the Sub-Committee came to the following conclusions:—

1. Recent statistics gave less cause for anxiety about the stocks of haddock and cod than had been felt earlier.

2. It was not possible to report the existence of any significant relationship between the numbers of recruits to the commercial stocks and the size of the spawning populations which gave rise to them.

Bearing in mind (a) the introduction in 1954 of a minimum-mesh regulation (75 mm.) by the Permanent Commission and (b) the recent agreement between Denmark and the United Kingdom on Fishery Limits at Faroe, the Sub-Committee felt that a few years must be allowed to elapse before the results of these conservation measures could be assessed. In the hope that circumstances would remain stable enough for such an assessment to be made, and in the assurance that the countries concerned would maintain their studies of the Faroe stocks, the Sub-Committee recommended:—

That it was no longer necessary for the Sub-Committee to meet, although it was hoped that the Distant Northern Seas Committee would pay special attention to the state of the stocks at Faroe, both in relation to the recent conservation measures and in relation to environmental changes.

It was further recommended that the Chairman prepare and publish a summary report.

This is presented herewith.

VERSION FRANÇAISE

Réunion Spéciale sur les "Races de Hareng"

Les rapports suivants sont présentés et discutés:—

*Ancellin, J.: "Considérations sur les harengs du Sud de la Mer du Nord et de la Manche orientale. (Résumé d'observations faites de 1946 à 1955.")

Baxter, I.: "The composition of the Minch herring stock".

Blaxter, J. H.: "The cranial osteology of the herring in racial investigations."

Blaxter, J. H.: "The racial problem in herring from the viewpoint of recent physiological, evolutionary, and genetical theory".

*Burd, A. C.: "The North Shields fishery, 1949—55".

*Bückmann, A. & Hempel, G.: "Some results of German investigations on herring larvae".

Cushing, D. H.: "Some changes in vertebral counts".

*Cushing, D. H.: "The Downs herring".

Dutt, S.: "Number of pectoral fin rays in the spring- and autumn-spawning herring of Kiel Bay".

Einarsson, H.: "The Icelandic herring and racial problems".

Friðriksson, Á.: "The tribes in the north coast herring of Iceland with special reference to the period 1948—1955".

Gilis, Ch.: "Recherches sur la biologie du hareng".

Jensen, Aa. J. C.: "Racial investigations on herring, especially on the adult herring in the Skagerak".

June, Fred C.: "Variations in meristic characters of young Atlantic menhaden, *Brevoortia tyrannus*".

Krefft, G.: "Counting of gill rakers as a method for morphological herring investigations".

Kändler, R. & Dutt, S.: "Fecundity of Baltic herrings".

Marty, Ju. Ju.: "Race formation and marine herring races".

Parrish, B. B. & Sharman, D.: "Some remarks on methods used in herring racial investigations, with special reference to the study of otoliths".

*Popp Madsen, K.: "Meristic characters in the young herring of the Bløden Ground area".

*Popp Madsen, K.: "Stock composition of the young herring in the Bløden Ground area".

Popiel, J.: "The difference in biological groups of herring in the southern Baltic".

Postuma, K. H.: "On the distinction of herring races in the autumn- and winter-spawning herring of the North Sea and English Channel by means of the otoliths and an application of this method in tracing the offspring of the races along the continental coast of the North Sea".

*Richardson, I. D.: "Selection of representative samples in a herring fishery".

Schubert, K.: "Investigations on the values of l_1 in the North Sea bank herring".

*Wood, H.: "The race composition of the Clyde herring".

Zijlstra, J. J.: "On the spawning communities of the herring in the Southern North Sea and the English Channel (preliminary results)".

Østvedt, O. J.: "Some considerations on the homogeneity of the Atlanto-Scandian herring".

Ces rapports, sauf ceux marqués d'un astérisque, seront publiés dans la série *Rapports et Procès-Verbaux*, Vol. **143**.

Rapport et Recommandations du Comité Consultatif

Président: M. R. S. WIMPENNY

I. Compte-rendu

1. Le Président ouvre la séance en souhaitant la bienvenue aux membres et aux nouveaux présidents M. OLAV AASEN et le Dr. COLE.

2. Programme de la Réunion.

L'attention des membres est attirée sur la nécessité de vérifier soigneusement les listes des membres des comités au début des réunions. Etant donné que la réunion commune du Comité des Mers Baltique-Belts et du Comité du Saumon et de la Truite a été annulée, le temps réservé à cette réunion est accordé au Dr. LUCAS et au Professeur STEEMANN NIELSEN, qui en ont besoin. Le Secrétaire Général annonce qu'une conférence sera faite vendredi 5. octobre par le Dr. G. THORSON sur "Parallel level bottom animal communities and their 'Balance' between predators and prey animals."

3. Rapports des Comités.

Les rapports et recommandations des différents comités sont discutés et acceptés à la seconde séance; les divers présidents donnent un aperçu des programmes et des recommandations de leur comité. Le Comité étudie plus particulièrement les recommandations des Comités des Pêches Comparées et du Hareng, celles de ce dernier comité faisant l'objet d'une discussion approfondie.

4. Proposition de Modification de l'Organisation des Comités.

A la première séance du Comité, une proposition tendant à la modification de l'organisation des comités du Conseil a été soumise par MM. HULT et WIMPENNY. Il a été décidé de créer un petit Comité *ad hoc*, composé de MM. HULT, ROLLEFSEN et WENT, qui élaboreront un mémorandum en fonction des réactions des membres des comités à cette proposition. Au cours de la semaine, le Comité *ad hoc* a tenu plusieurs réunions, et il a remarqué qu'en général les Comités des Secteurs sont en faveur de la modification proposée tandis que les Comités Scientifiques s'y opposent. A la seconde séance la Recommandation 1 est adoptée.

5. Invitation de l'I.C.N.A.F.

A la première séance, on discute d'une proposition de l'I.C.N.A.F. invitant le Conseil à réunir le Comité des Pêches Comparées à Lisbonne au mois de mai 1957. Le Comité des Pêches Comparées doit assister à une "Réunion de 7-jours sur la dynamique des populations et sur la sélectivité des procédés de pêche" qui suivra la réunion annuelle de l'I.C.N.A.F. en 1957. Il est décidé de remettre ce document au Dr. LUCAS pour que son Comité puisse le discuter. A la seconde séance le Dr. LUCAS insiste sur le fait qu'il est absolument nécéssaire pour son Comité d'accepter l'invitation, et la Recommandation 6 est adoptée. Le Secrétaire Général est chargé de répondre par l'affirmative à l'invitation de l'I.C.N.A.F.

6. M. R.S. WIMPENNY est réélu Président du Comité.

II. Recommandations

1. Organisation

Le Comité *ad hoc*, établi pour étudier la proposition de MM. HULT et WIMPENNY, est d'avis que des modifications de l'organisation des activités des Comités du Conseil pourront être faites seulement après mûre réflexion. Il est décidé que des propositions des membres du Conseil à cet égard seront envoyées en triple exemplaire au Dr. WENT, et qu'à la prochaine réunion du Conseil la question sera traitée de nouveau.

2. Publications

(a) Il est convenu que les contributions présentées aux réunions spéciales sur les "Races de Hareng" et sur "La Pêche du Hareng au Sud de la Mer du Nord" seront imprimées dans les *Rapports et Procès-Verbaux*, dans la mesure où elles n'auront pas paru dans des publications nationales. Les contributions seront éditées par le Dr. BÜCKMANN et M. AASEN, respectivement.

(b) Il est décidé que les Cartes Hydrographiques Synoptiques seront étendues aux secteurs du Cattégat, des Belts et de la Baltique ouest; le nombre d'observations étant trop limité pour permettre une extension vers le nord et l'ouest. L'extension proposée impliquera des frais supplémentaires de 600 kr. par an.

(c) Il est convenu que la carte des secteurs statistiques employés par l'I.C.N.A.F. paraîtra dans le *Bulletin Statistique* à la place de l'actuelle carte de la côte atlantique de l'Amérique du Nord.

3. Recommandations Exigeant des Démarches Immédiates

(a) Conformément à la Recommandation 1 du Comité du Hareng, l'attention des Gouvernements des pays pêchant dans le sud de la Mer du Nord est attirée sur les craintes du Conseil au sujet de l'état actuel du stock de hareng dans ce secteur.

(b) L'accent est mis sur le besoin de recevoir des statistiques "d'effort de pêche" pour le hareng dans la Mer du Nord. Ces données statistiques seront décomposées, autant que possible, par petits secteurs et par mois.

4. Classification des Données Hydrologiques

Il est décidé que les extraits des bathythermogrammes reçus par le Service Hydrographique seront reportés sur cartes perforées. Les frais seront approximativement de 300 kr. par an.

5. Réunions Spéciales

(a) Il est convenu que la réunion demandée par le Comité des Mers Baltique-Belts pour discuter des "Mesures à prendre pour améliorer le stock de poissons démersaux dans la Baltique" se tiendra au cours de la prochaine réunion du Conseil.

(b) Il est décidé que le Comité du Plancton tiendra une réunion spéciale sur les "Mesures de la production de base dans la mer" pendant deux jours avant la réunion du Conseil. On souhaite, que l'U.N.E.S.C.O. fournira des fonds pour couvrir les dépenses provoquées par l'invitation des experts des U.S.A. et d'autres pays et les frais d'impression des contributions présentées à cette réunion.

6. Réunions Intermédiaires

(a) L'invitation de l'I.C.N.A.F. au C.I.E.M. pour que son Comité des Pêches Comparées tienne une réunion à Lisbonne au cours de la "Réunion de 7-jours" au mois de mai—juin 1957 est bien accueillie et acceptée. En vue de cette réunion, on décide que le Conseil fournira une somme ne dépassant pas 5,000 kr. pour couvrir des frais de séjour du Président et des 14 membres du Comité pendant 5 jours.

(b) Conformément à la Recommandation 2 du Comité du Hareng, il est décidé que trois experts nommés par ce Comité tiendront une réunion à Copenhague, dès que possible, et en tout cas avant la fin de 1956, pour élaborer un programme détaillé de marquage intensif dans le sud de la Mer du Nord. Il est probable qu'un tel projet exigera la participation et la contribution financière des Gouvernements intéressés. Il est ensuite décidé que, dès que possible, ces Gouvernements seront invités à envoyer des représentants à une réunion spéciale, convoquée par le Secrétaire Général, au cours de laquelle la question de participation sera discutée. Les dépenses nécessaires seront de 2,000 kr.

(c) Il est convenu qu'une réunion du Sous-Comité pour la Préparation des Cartes Moyennes de Salinité et de Température de Surface se tiendra à Copenhague ou à Hambourg en 1957, quand il sera nécessaire. Les dépenses seront d'environ 2,500 kr.

M. Smed a été admis membre de ce Sous-Comité.

Rapports et Programmes des Comités

Comité des Mers Nordiques Lointaines

Président: Dr. Å. Vedel Tåning

I. Compte-rendu

Le Président souhaite la bienvenue aux membres et aux personnes invitées. Le Rapport Administratif et les *Annales Biologiques* sont adoptés.

Le Président rend compte brièvement du travail exécuté dans le secteur; il fait remarquer qu'en ce qui concerne les études du milieu, les recherches tant sur le plancton que sur les benthos dans le secteur ont été insuffisament développées dans les rapports des divers pays. Les espèces de poisson dont l'importance vient immédiatement après celle du hareng et de la morue devraient être traitées d'une façon plus détaillée qu'elles ne l'ont été jusqu'ici dans le Comité (plus particulièrement le sebaste, le flétan, la plie, et le loup). Il rappelle brièvement quelques-uns des problèmes les plus généraux du secteur, en particulier les variations climatiques et leur effet sur les divers stocks de poisson qui se trouvent protégés par la modification des limites territoriales dans des eaux des Féroés et de l'Islande. Le Président insiste sur l'importance de la poursuite des études traitant ces questions.

Le Comité étudie un projet soumis par le Comité Consultatif concernant la réorganisation des comités. Le Comité estime que le plan proposé par MM. Hult et Wimpenny est satisfaisant.

Le programme à longue échéance des secteurs nordiques est revu et discuté. Après discussion, il est convenu que la recommandation ci-dessous sera soumise au Comité Consultatif.

Le Dr. Å. Vedel Tåning est réélu Président.

II. Communications

Les rapports suivants sont présentés et discutés:—

Steinar Olsen: "The determination of age in halibut and the age distribution of spawning halibut in north Norway 1956".

H. Einarsson: "Some remarks on the plaice off the east coast of Iceland".

U. Stefánsson: "Report on hydrographical and chemical work in Icelandic waters in May—June 1956".

Le Dr. P. M. Hansen présente un court rapport sur les recherches récentes faites dans les eaux groënlandaises, et la méthode de marquage des sebastes fait l'objet d'une discussion; des expériences pleines de promesses sont faites dans les eaux du Groënland, de l'Islande et de la Norvège.

III. Programme de Travail

Les programmes des travaux à la mer en 1957, élaborés par plusieurs pays, sont brièvement exposés. Au mois de janvier 1957 les détails des programmes des travaux à la mer seront communiqués par circulaire par l'intermédiaire du Bureau Central.

Allemagne: L'"Anton Dohrn" effectuera ses travaux de recherches comme suit:— Janvier: les eaux islandaises; colin et sebaste. Mars et avril: détroit Danois; opérations hydrologiques; sebastes. Juillet et août: Mer de Barentz; colin et sebastes. Novembre et décembre: les eaux de Finnmark et des Lofoten; colin et sebastes. Des recherches sur la faune du fond seront entreprises dans tous ces secteurs.

Angleterre: Les travaux seront continués, surtout dans la Mer de Barentz.

Danemark: Assistés par des bateaux affrétés, les "Dana", "Adolf Jensen", "Immanuel" et le nouveau côtre de recherches "Sujumut" exécuteront des travaux dans le secteur.

Ecosse: L'"Explorer" ira effectuer des travaux de recherches sur le plateau de l'Irlande et entre l'Islande et le Groënland Oriental.

France: Le programme sera donné à une date ultérieure.

Islande: Deux bateaux de recherches ainsi que des bateaux affrétés iront exécuter des travaux dans les eaux de l'Islande et du Groënland Oriental.

Norvège: Le "G. O. Sars" effectuera des recherches sur le hareng, la morue, le colin, ainsi que sur le plancton. Le "Johan Hjort" entreprendra des marquages de morue, de colin et de flétan. Des échantillonages de plancton. Deux bateaux affrétés iront exécuter des pêches comparées dans la Mer de Barentz et dans les eaux du Groënland. Un nouveau bateau de recherches sera probablement mis en service au mois d'août et septembre.

U.R.S.S.: Deux bateaux de recherches, "Professor Mesjatzev" et "Akademic Berg", iront exécuter des recherches sur la morue, l'aiglefin, le sebaste et le colin dans la Mer de Barentz, et dans la Mer de Norvège. Deux chalutiers garde-pêche "Russia" et "Swerdtowsk" opéreront dans le secteur.

IV. Recommandation

Le Comité des Mers Nordiques Lointaines recommande que les divers comités spéciaux soient priés de rédiger à nouveau leurs programmes de travaux prioritaires, compte tenu des secteurs intéressés.

Comité des Mers Nordiques Proches

Président: Dr. J. Hult

I. Compte-rendu

Le Président ouvre la séance en souhaitant la bienvenue aux membres et aux visiteurs, en particulier aux représentants des deux nouveaux pays membres, la Pologne et l'U.R.S.S.

La liste des membres est vérifiée. Le Rapport Administratif et les *Annales Biologiques* sont adoptés.

A la demande du Comité Consultatif, la question d'une réorganisation des comités est débattue, et la majorité des membres du Comité est en faveur de la nouvelle proposition.

La recommendation de 1955 par laquelle les divers pays membres ont été priés de fournir toutes leurs statistiques sur les prises de merlan a été suivie par tous les pays intéressés. Le Comité demande au Dr. Aa. J. C. Jensen de préparer un résumé sur les données disponibles et de l'envoyer aux membres.

Le Dr. J. Hult est réélu Président.

II. Communications

Les rapports suivants sont présentés et discutés:—

L. Birkett: "A note on the distribution of the benthos of the Dogger Bank".

R. S. Wimpenny: "Young plaice samples from the English coast".

Hj. Bohl: "On the biology of the dab in the North Sea".

J. Messtorff: "On the biology of the whiting in the North Sea".

E. Bertelsen: "Danish whiting taggings in 1956".

J. Lundbeck & D. Sahrhage: "An estimate on the destruction of undersized haddock by German steam herring trawlers".

III. Programme de Travail

Les rapports du travail exécuté par chaque pays au cours de l'année sont distribués. Quelques pays membres présentent des programmes de travail provisoires pour 1957 et les représentants des autres nations prendront leurs dispositions pour faire parvenir des copies de leurs programmes aussitôt que possible au Président qui les transmettra aux membres du Comité.

Le programme à longue échéance du Comité est à nouveau discuté et il est décidé de suspendre la décision en attendant que la question d'une réorganisation des comités soit résolue.

Comité des Mers Baltique-Belts

Président: Dr. Aa. J. C. Jensen

I. Compte-rendu

Le Président souhaite la bienvenue aux membres et aux personnes invitées. A cette séance le Professeur I. Hela, Finlande, remplace le Dr. S. Segerstråle.

Les recherches en cours font l'objet d'un rapport et sont discutées. Les programmes pour 1957 sont étudiés, en vue d'une coopération dans la recherche.

Les engins de pêche standards sont discutés. Quelques détails sur le filet Hensen et le filet tournant seront examinés avant la réunion de 1957.

Les épreuves du Rapport Administratif et des *Annales Biologiques* sont soumises aux membres pour correction et approbation.

Le Comité discute ensuite la proposition faite par MM. Hult et Wimpenny concernant une réorganisation des comités. La proposition est approuvée à l'unanimité, surtout pour ce secteur que l'on peut considérer comme une unité biologique.

Le Dr. Aa. J. C. Jensen est réélu Président.

II. Communications

Le rapport suivant et les points 1 et 2 sont discutés:—

T. F. Dementjeva: "Méthodes d'observations de la survie des poissons aux stades précoces (sur l'exemple de l'anchois et du strömling)".

1. Tailles-limites minimum des poissons et autres mesures pour améliorer le rendement des pêches dans la Baltique — en vue de la possibilité d'une nouvelle Convention Internationale.

Le Comité reconnaît la nécessité d'une étude sérieuse de toutes les données disponibles et d'un rassemblement de nouveaux documents (voir Programme de Travail), ce qui permettrait d'appuyer scientifiquement les mesures à recommander; les informations de ce genre seront communiquées par circulaire avant la réunion ordinaire de l'année prochaine. Il est évident, que cette ample et importante question ne pourra pas être convenablement traitée à une réunion ordinaire, et la recommandation est donc acceptée.

2. L'explication possible des conditions biologiques extraordinaires dans la Baltique en 1956, et spécialement de la basse teneur en graisse du hareng dans la région de Bornholm fait l'objet d'une discussion.

III. Programme de Travail

Il est décidé de poursuivre le programme de l'année précédente, mais le Comité attache une grande importance aux recherches nécessaires pour répondre au problème des meilleures mesures à prendre pour améliorer les stocks de poisson, à savoir, mensurations au marché, détermination des taux de croissance, de mortalité naturelle et de mortalité due à la pêche à l'aide de pêches quantitatives et qualitatives, et par des expériences de marquage.

IV. Recommandation

Le Comité recommande qu'une réunion spéciale sur l'amélioration des stocks de poissons demersaux dans la Baltique se tienne deux jours avant la réunion du Conseil en 1957, ou, au besoin, pendant la réunion principale du C.I.E.M.

Comité Atlantique

Président: Dr. J. Furnestin

I. Compte-rendu

Les pays membres du Comité sont représentés, à l'exception de la Grande Bretagne et de l'U.R.S.S.

La liste des membres est revue, le Rapport Administratif adopté, les *Annales Biologiques* corrigées et les communications annoncées.

La proposition de modification de Statuts faite par MM. Hult et Wimpenny adoptée à l'unanimité.

Le Dr. J. Furnestin est réélu Président.

II. Communications

P. Desbrosses: "Résultats préliminaires de la campagne 1956 du navire océanographique 'Président-Théodore-Tissier', première partie."

R. Letaconnoux: "Résultats préliminaires de la campagne 1956 du navire océanographique 'Président-Théodore-Tissier', deuxième partie."

J. Ancellin: "Résultats préliminaires de la campagne 1956 du navire océanographique 'Président-Théodore-Tissier', troisième partie."

R. Gravier: "Les 'loups' des côtes atlantiques du Maroc (*Morone* sp.)."

J. Dardignac: "Les ombrines des côtes atlantiques du Maroc."

R. Coupé: "Quelques données sur la biologie du *Dentex macrophtalmus* (C.-V.) des côtes atlantiques marocaines."

R. Moal: "Nouvelles observations sur la courbine (*Sciaena aquila* Lacép.) en Mauritanie."

III. Considérations diverses et Programme

Est mise au programme de 1957 l'étude des espèces pélagiques et littorales ayant pu changer de cantonnement au cours des vingt dernières années dans le secteur du Comité Atlantique ou ayant apparu à une époque récente. Des listes des espèces nouvelles seront dressées par secteurs.

Le Portugal d'outre-mer (São Tomé et Principe) étudiera l'hydrologie du Golfe de Guinée et continuera à faire des collections et déterminations des poissons de cette zone.

L'Espagne organisera peut-être une croisière du "Xauen" sur la côte de Galice, et l'Allemagne un itinéraire entre le Golfe de Gascogne et Lisbonne.

La France étudiera le maquerau (biologie et écologie) en Mer Celtique et complètera l'hydrographie et l'évaluation des réserves de poissons comestibles sur les fonds bordant le Plateau Continental entre le Golfe de Gascogne et Porcupine.

Comité des Pêches Comparées

Président: Dr. C. E. Lucas

I. Compte-rendu

Le Président souhaite la bienvenue aux membres du Comité et aux observateurs, en particulier aux représentants de l'U.R.S.S. et de la Pologne nouvellement élus membres du Comité. Tous les pays, sauf les Pays-Bas, sont représentés. Il est décidé que toute modification dans la composition du Comité sera notifiée au Président avant le 20. Octobre.

Le Rapport Administratif pour 1955 qui est à la disposition des membres est approuvé; le Président remercie les membres d'avoir fourni les documents pour le rapport.

Le Président rappelle au Comité la liste complète des projets, allant de la standardisation de "l'effort de pêche" à l'établissement des facteurs de sélectivité, liste qui a été soumise au Comité par le Conseil, lui-même informé par la Commission Permanente de la Convention de 1946 sur la Pêche. Les détails de ces projets communiqués par circulaire à tous les pays peuvent être résumés comme suit:—

(a) Calculs comparatifs de "l'effort de pêche".
(b) Définition du chalut "léger".
(c) Caractéristiques des jauges pour la mesure des mailles.
(d) Définition des matériaux et des procédés.
(e) Données de sélectivité.
  i) Manille et sisal en fil simple et double; chalut; morue et merlu.
  ii) Coton et chanvre en fil simple et double; chalut et senne; toutes especes.
  iii) Fibres synthétiques en fil simple et double; chalut et senne; toutes espèces.
  (Concernant les eaux proches et lointaines données relatives, mais l'on insiste surtout à recevoir des données sur la morue de la Mer du Nord et des eaux lointaines, sur l'aiglefin, le sebaste — tous pris au chalut.)
(f) L'influence des facteurs autre que la maille et le textile sur la sélectivité (soit: puissance, flot, forme du filet, etc.).

Un certain nombre des rapports mentionnés ci-dessous contiennent les données demandées. De plus amples informations seraient cependant nécessaires le plus tôt possible, et le Président insiste sur le fait que tous les pays doivent s'efforcer à contribuer, plus encore qu'auparavant, aux fonds communs de connaissance de l'aire d'activité du Conseil.

Cette demande prend une importance encore plus grande du fait de l'invitation de l'I.C.N.A.F. au Conseil de faire réunir ce Comité à Lisbonne en mai—juin 1957 à l'occasion de la "Réunion de 7-jours sur la dynamique des populations et sur la sélectivité des engins de pêche (équipement et engins)", qui suivra la réunion annuelle de la Commission en 1957. La F.A.O. a été également invitée à collaborer. En principe, le Comité accepte l'invitation; puis il s'ensuit une importante discussion sur la meilleure façon dont le Conseil peut coopérer sans perdre de vue la communauté indiscutable d'intérêts avec l'I.C.N.A.F. sur ces deux sujets, ainsi que sur la standardisation de "l'effort de pêche", troisième sujet proposé par la F.A.O. Les membres présents estiment à l'unanimité, que si le Conseil accepte l'invitation il lui faudra souligner l'importance des objectifs immédiats du Comité en organisant la réunion du Comité des Pêches Comparées de telle sorte, qu'elle contribue aux objectifs élargis de la réunion commune. On remarque aussi qu'une telle occasion offrira la possibilité de discussions préliminaires sur des sujets d'intérêt général avec le Comité de Recherches et Statistique de l'I.C.N.A.F., tels que la dimension minimum des mailles et les méthodes permettant de les mesurer dans l'Atlantique du Nord. Finalement, la Recommandation 1 est approuvée et sera soumise au Comité Consultatif.

En tenant compte de la réunion spéciale du mois de mai, l'on discute les Programmes de Travail pour 1957, et il est rappelé, que des contributions seront présentées à la réunion spéciale ainsi qu'à la réunion statutaire au mois d'octobre 1957. Des dispositions seront prises pour permettre l'échange des program-

mes dès qu'ils seront complètés, afin d'éviter le chevauchement et de permettre la coopération souhaitable.

Un document du Comité Consultatif concernant la possibilité d'une réorganisation du système actuel d'établir les rapports est à la disposition des membres. Comme la proposition ne concerne pas ce Comité, il est convenu de ne faire aucun commentaire spécial.

Cette année encore, le Comité est très heureux de constater que le Dr. KRISTJONSSON de la F.A.O. assiste à la séance. Ce dernier donne des renseignements complémentaires sur les projets du Congrès des Engins de Pêche de F.A.O., qui aura probablement lieu à Hambourg du 7 au 12 octobre 1957. Un avant-projet du programme a été élaboré et communiqué par circulaire avec une lettre explicative à un grand nombre de firmes et de savants intéressés ainsi qu'à la presse commerciale du monde entier. La première réaction a été trouvé très satisfaisante et il est à supposer qu'un grand nombre de contributions sera présenté au congrès, auquel assisteront également de nombreux observateurs. Le Dr. KRISTJONSSON ainsi que le Président prient instamment les membres du Comité de faire leur possible pour que leurs pays respectifs connaissent à fond les buts et le programme du congrès, afin qu'ils fassent parvenir les communications et assurent une bonne représentation.

Le Dr. C. E. LUCAS est réélu Président.

II. Communications

Treize communications sont présentées, groupées comme suit:—

(a) *La dimension des mailles des chaluts.*

J. N. CARRUTHERS: Demonstration of current instruments.

J. SCHÄRFE: "Telemetering depth-meter for pelagic trawls."

(b) *Sur les méthodes de pêche.*

A. I. TRESHCHEV: "Stern trawling in the U.S.S.R.".

P. G. BORISOV: "Experimental and commercial fishing in the U.S.S.R. with the help of electric light".

(c) *Sur les effets du mouillage des fils.*

G. KLUST: "Changes in length of net twines by water."

G. KLUST: "Changes in diameter of net twines by water."

(d) *Sur la sélectivité des mailles et questions qui en découlent.*

A. R. MARGETTS & R. J. H. BEVERTON: "Effect of cod-end meshes on the working characters of trawls."

A. R. MARGETTS & R. J. H. BEVERTON: "The length girth relation in whiting and cod and their application to mesh selection".

I. D. RICHARDSON: "Selection in drift nets."

A. VON BRANDT: "Selectivity of manila and 'perlon' cod-ends."

A. R. MARGETTS: "A mesh experiment with sisal, cotton and nylon cod-ends."

R. J. H. BEVERTON: "Mesh selection of North Sea cod and Arctic haddock."

W. CIEGLEWICZ: "A new type of mesh gauge".

La dernière série de communications comprend des exposés de valeur sur les travaux en cours pour la sélectivité des mailles, et le Président demande notamment, que ces communications ainsi que tout nouveau rapport soient présentés à la prochaine réunion du Comité, peut-être à Lisbonne.

Par la suite un film très intéressant est présenté. Il a trait aux recherches du Professeur BORISOV sur l'attraction des poissons par la lumière, et fournit quelques illustrations des méthodes commerciales. En fin de séance le Président adresse ses remerciements aux participants qui ont contribué et pris part aux débats.

III. Recommandations

Les recommandations suivantes sont adoptées:—

1. (a) L'invitation de l'I.C.N.A.F. au C.I.E.M. de tenir une réunion de son Comité des Pêches Comparées à Lisbonne au cours de la "Réunion de 7-jours" en mai—juin 1957 doit être acceptée.

   (b) Pour cette réunion spéciale le Président demandera la présentation de contributions sur des sujets proposés par le Conseil, et par l'intermédiaire du Conseil par la Commission Permanente spécialement sur la détermination de "l'effort de pêche" et de standardisation.

   (c) La réunion spéciale prendra note des progrès faits par les autres groupes de travail à Lisbonne surtout en ce qui concerne les tâches du Comité mentionnées ci-dessus. La réunion spéciale devra établir un rapport sur ces sujets à la réunion du Conseil en octobre (ou, au besoin auparavant, au Comité de Liaison).

   (d) Les membres et les participants prendront part aux débats des autres groupes de travail, chaque fois que ce sera possible.

Comité des Poissons Gadoïdes

Président: M. G. Rollefsen

I. Compte-rendu

La liste des membres comprenant maintenant les représentants de l'U.R.S.S. et de la Pologne, est arrêtée et deux modifications sont apportées à la composition du Comité: l'Angleterre est représentée par M. P. J. Woodhead au lieu du M. L. Birkett et l'Allemagne est représentée par le Dr. A. Kotthaus au lieu du Dr. U. Schmidt.

Le Rapport Administratif et les *Annales Biologiques* sont présentés et adoptés.

La majorité des membres du Comité est en faveur de la proposition faite par MM. Hult et Wimpenny.

M. G. Rollefsen est réélu Président.

II. Communications

J. A. Gulland: "The English hake fishery with particular reference to the effect of fishing on the stock".

Steinar Olsen: "The Norwegian coalfish investigations; growth of immature fish and tagging experiments".

Jón Jónsson: "Some recent investigations on the Icelandic stock of haddock".

N. A. Maslov: "Some results of Soviet investigations into the biology of gadoid fish in the Barents Sea in recent years".

III. Programme de Travail

Les rapports fournis par chaque pays membre montrent qu'en général leurs programmes de recherche suivent les lignes tracées précédemment.

Il est cependant intéressant de souligner le fait que les recherches sont, dans une large mesure, axées sur les problèmes relatifs à la dynamique des populations.

IV. Considérations

Le Comité désire attirer l'attention du Comité de Liaison sur les contributions présentées à la session, notamment celle de M. Gulland sur le merlu, ayant un rapport immédiat avec les problèmes étudiés à la Commission Permanente.

Le Comité désire également attirer l'attention des Comités de Liaison et de Statistique sur le fait qu'il serait souhaitable d'obtenir des renseignements sur la valeur des diverses catégories de tailles des espèces de poissons d'importance économique.

V. Recommandations

Puisque les bateaux de recherche de plusieurs nations opèrent simultanément dans les mêmes régions et que leurs programmes généraux ont, dans une large mesure, les mêmes buts, le Comité, reconnaissant la valeur d'une coopération, recommande:—

1. Que les programmes de croisières permettent aux bateaux de recherche de se rencontrer afin d'échanger quelques idées et de faire connaître leurs résultats.

2. Que soit donnée aux chercheurs l'occasion de discuter avec leurs collègues des autres pays les programmes de travail, la standardisation des méthodes etc. entre les réunions du C.I.E.M.

Comité du Hareng

M. O. Aasen préside

I. Compte-rendu

La liste des membres est vérifiée et quelques amendements sont acceptés. Le Rapport Administratif et les *Annales Biologiques* sont présentés et adoptés. Au cours de la réunion les membres exposent leurs programmes de travail pour l'année prochaine.

Une réunion sur les "Races de Hareng" s'est déroulée sur l'initiative du Professeur Bückmann du 25 au 27 septembre. Une réunion spéciale sur "Le Hareng au Sud de la Mer du Nord" a eu lieu le 28 septembre. Afin de traiter quelques problèmes précis, soulevés au cours de la dernière réunion, deux comités *ad hoc* sont établis:—

(a) Sud de la Mer du Nord. Elaboration d'un programme de travail de coopération internationale permettant l'étude des stocks du hareng de la Mer du Nord. Le Comité du Hareng désigne les membres du Comité *ad hoc* chargé de l'établissement d'un programme détaillé.

(b) Eaux Nordiques. Elaboration d'une proposition d'élargissement du champ d'activité des études sur le hareng dans les eaux nordiques, (voir ci-dessous).

La réorganisation des comités telle qu'elle a été proposée est étudiée et la recommandation suivante est adoptée:—

"Le système actuel de comptes-rendus est satisfaisant, mais le Comité du Hareng est d'avis que le système de comptes-rendus doit être conforme aux Statuts du Conseil."

M. Olav Aasen est élu Président.

II. Communications

Les rapports suivants sont lus et discutés:—

J. Ancellin: "Considérations sur les harengs du Sud de la Mer du Nord".

J. Zijlstra: "The catch per unit of effort of the Dutch drift-net fisheries in different regions of the North Sea in the period 1947—1955".

B. B. Parrish & R. E. Craig: "Recent changes in the North Sea herring fisheries".

Min. Agric. Fish. and Food: "On the herring of the Southern North Sea", summarized by Dr. D. H. Cushing.

Olav Aasen: "Some recent Norwegian herring investigations".

Ch. Gilis: "Evolution dans le temps et dans l'espace de la composition des concentrations de harengs exploitées par les pêcheurs belges dans la Mer du Nord au cours de la période 1951—1955".

Ju. Ju. Marty: "Peculiarities of the herring fishery in the Barents and Norwegian Seas".

G. Nikolsky: "Perspectives of a new herring fishing area".

Á. Friðriksson: "Recent herring research on the north coast of Iceland".

J. Ancellin: Remarques sur l'Atlas de Pêche Français de la Mer du Nord.

III. Recommandations

1. Sud de la Mer du Nord.

(a) Le Comité fait part de son inquiétude et de ses craintes sur l'état actuel des stocks de hareng dans le sud de la Mer du Nord.

(b) Le Comité désire attirer l'attention des Gouvernements membres sur cette inquiétude et insiste pour que tous les pays intéressés coopèrent à un programme commun élaboré dans le but de déterminer l'importance relative des divers facteurs influençant le rendement de la pêche dans le sud de la Mer du Nord et, même, dans toute autre pêcherie de hareng de la Mer du Nord. On souligne surtout le besoin urgent de recevoir de tous les pays des données statistiques exactes de "l'effort de pêche", avec un programme de marquage intensif.

2. Eu égard à la Recommandation 1 le Comité du Hareng demande au Conseil de couvrir les dépenses relatives à une réunion des trois experts qui aura lieu à Copenhague pendant 5 jours avant la fin de 1956.

3. Eaux Nordiques. Le Comité du Hareng recommande que le champ d'activité de la coopération dans les recherches sur le hareng dans les eaux nordiques soit élargi.

4. Le Comité du Hareng recommande que les rapports présentés à la réunion sur les "Races de Hareng" ainsi qu'à la réunion sur la pêche du hareng dans le sud de la Mer du Nord soient publiés dans un volume spécial de la série *Rapports et Procès-Verbaux* dans la mesure où il ne seront pas édités dans des publications nationales.

Programme proposé par le Comité *ad hoc* du Sud de la Mer du Nord

Membres: O. Aasen, E. Bertelsen, D. H. Cushing

1. Le Comité *ad hoc* est d'avis qu'une coopération internationale pourra débutée par un programme de marquages intensifs sur le Bløden Ground, secteur d'importance vitale. Le programme est dirigé vers cette "nursery" afin d'y résoudre le problème de la mortalité de la pêche et de déterminer l'importance du recrutement vers les pêcheries d'individus adultes dans cette région.

2. Les problèmes concernant mortalité et recrutement pourront être élucidés respectivement par des expériences de marquages internes et externes. Le Comité estime qu'afin que les poissons soient en bon état et afin d'obtenir des résultats quantitatifs il sera nécessaire d'employer un filet tournant, qui est l'engin le mieux approprié à un tel travail.

3. Le programme commencera en août 1957.

Les expériences de marquages internes permettant de déterminer les taux de mortalité seront faites selon les méthodes pratiquées par les norvégiens pour la pêche du gros hareng. Les marquages externes permettant de déterminer le recrutement et la migration seront faites selon les méthodes suédoises de recherche du hareng.

4. Afin d'assurer le succès des expériences de marquages internes il est important que les pays membres fassent un inventaire de leurs usines de farine de hareng et s'assurent de leur équipement en aimants dont l'éfficacité aura été contrôlée.

5. Pendant les expériences des statistiques sur "l'effort de pêche" et le rendement par petits secteurs dans les "nursery grounds" devront être fournies en détail; il va sans dire que l'on demande ces statistiques pour toute la Mer du Nord par petits secteurs unitaires afin d'éclaircir le problème des migrations.

6. *Finance.* Afin d'entreprendre les recherches sur le hareng du Bløden Ground, il sera nécessaire d'armer un bateau convenable pour un mois, en premier lieu, en 1957. Une évaluation des frais d'armement d'un bateau, du matériel de marquage, et des recompenses s'éleve à 200,000 couronnes danoises. Les pays parti-

cipants pourront contribuer pour une part égale à cette dépense, et ils devront, dès que possible, obtenir l'accord de principe de ce projet. La contribution de chaque pays sera approximativement un dixième de la dépense totale.

7. Si ces propositions sont acceptées trois experts seront nommés par le Comité du Hareng pour élaborer un programme détaillé qui sera soumis au Comité du Hareng en temps voulu.

Programme proposé par le Comité *ad hoc* des Eaux Nordiques

Membres: O. Aasen, Ju. Ju. Marty, H. Einarsson

Le Comité *ad hoc* propose que le travail en coopération doit couvrir dans sa première phase:—

1. Un courant d'échange d'informations sur le hareng de la classe d'âge de 1953, qui, d'après les recherches soviétiques, est une future classe d'âge importante.

2. Il serait souhaitable de réaliser un projet combiné de marquage du hareng mourman selon la méthode de marquage interne.

3. L'U.R.S.S. est invité à se joindre à la communauté scandinave pour les recherches hydrologiques et la localisation des bancs de poissons afin d'échanger les renseignements obtenus au cours des croisières d'été dans les eaux nordiques.

Comité de la Sardine

Président: Dr. J. Cuesta

I. Compte-rendu

La séance ouverte, le Président prononce quelques paroles en souhaitant la bienvenue aux membres du Comité ainsi qu'à M. Holt, observateur de la F.A.O.

1. Dans la composition du Comité sont inclus M. L. Faure (France), et le Dr. Lozano Cabo (Espagne), ce dernier remplaçant Mme M. G. de Navarro.

2. Le Rapport Administratif (1955) et les *Annales Biologiques* sont approuvés.

3. Puis un exposé est fait des travaux réalisés en 1956. M. Letaconnoux rend compte de ceux effectués sur la biologie de la sardine de La Rochelle. Dr. Furnestin donne quelques indications sur trois bateaux-pilotes-de-pêche munis d'écho-sondeurs dans trois régions différentes, Saint-Jean-de-Luz, Sables d'Olonne et Concarneau, ce qui a permis une augmentation considérable des rendements de la pêche de la sardine.

Le Professeur Bückmann expose les observations faites sur la ponte de printemps de la sardine (déterminations quantitatives des œufs) au sud de la Mer du Nord; Dr. Cushing sur la croisière du "Platessa" en printemps dans la région de Conway; M. G. Dannevig sur les lieux de ponte du "Sprat" en vue de connaître les "stocks" de cette espèce, ainsi qu'une étude biométrique sur la même espèce; le Dr. Ramalho signale les travaux effectués au Portugal en collaboration avec le Dr. Andreu (Espagne), sur le cycle sexuel (histologie) de la sardine ainsi que sur la composition des stocks.

Le Dr. Furnestin indique qu'à Casablanca et à Port-Etienne les travaux de l'année précédente ont été poursuivis.

Le Dr. Cuesta enfin signale que sur la côte nord d'Espagne, ainsi qu'aux Iles Canaries les travaux biométriques sur l'anchois et la sardine ont été continués; les observations hydrologiques en relation avec la ponte des deux espèces dans la mer Cantabrique ont été intensifiées.

4. La proposition de MM. Hult et Wimpenny sera traitée dans une réunion conjointe des Comités Atlantique, Scombriformes et Sardine.

5. M. le Dr. Furnestin propose l'inclusion de l'étude des aloses dans le programme de 1957. Les deux propositions sont approuvées.

6. Le Dr. Cuesta est réélu Président du Comité.

II. Communications

R. Letaconnoux: "Les sardines pêchées en 1955 près de La Rochelle".

R. Moal: "La sardine de Mauritanie (*Sardinus pilchardus* Walb.). Etude de quelques charactères."

J. M. Navaz: "L'anchois de la côte Basque (1954—1956)".

J. Cuesta: "Conditions hydrologiques et ponte de la sardine et de l'anchois — côte Cantabrique 1956".

A. M. Ramalho: "Composition du produit de la pêche de la sardine au Portugal en 1954, 1955 et 1956 et tentative de prévision de pêche à court terme".

III. Programme de Travail

Sur le plan de travail pour 1957 on est d'accord pour continuer les travaux en cours sur la biométrie et la biologie des espèces qui sont une des activités du Comité en accordant une attention spéciale à l'étude de la ponte de ces espèces et les conditions hydrologiques des lieux de ponte et de pêche.

Comité des Poissons Scombriformes

Président: Dr. A. M. Ramalho

I. Compte-rendu

La liste des membres est corrigée. Le Rapport Administratif et les *Annales Biologiques* 1955 sont présentés et adoptés.

La proposition sur l'organisation des comités, soumise par le Comité Consultatif, fut examinée. Le Comité a exprimé son avis concordant.

Le Dr. A. M. Ramalho est réélu Président.

II. Communications

Lozano Cabo: "Notes sur la biologie et la pêche des thons".

F. Frade: "Thunnidae et Cybiidae de S. Tomé et Principe".

R. Letaconnoux: "Carte de la pêche au germon (mois de juin)".

III. Programme de Travail

Au programme adopté en 1955, le Comité a ajouté: Maquereau: Belgique — Etude de maquereau débarqué dans les ports de pêche de Belgique. Détermination de longueur, poids, sexe, état de maturation sexuelle, graisse mésentérique et âge.

Comité du Saumon et de la Truite

Président: Dr. A. E. J. Went

I. Compte-rendu

Le Président souhaite la bienvenue aux membres et aux observateurs. La liste des membres est revue, mais aucune modification n'y est apportée. Le Rapport Administratif pour 1955 est discuté et adopté. Les membres présentent des rapports sur l'avancement des travaux en cours en 1956. Les membres du Comité désirent exprimer leurs remerciements à leurs collègues suédois pour l'excursion du 30 septembre à Laholm, Suède, qui a été, non seulement intéressante, mais aussi éducative. Les membres du Comité désirent également présenter leurs remerciements au Comité Suédois des Poissons Migrateurs qui a permis à M. Kallenberg de faire un compte-rendu du travail actuellement en cours en Suède sur la "smoltification".

L'échange expérimental, entre les pays membres, d'œufs de saumon et de truite dans un but scientifique, l'organisation de l'étude de la nourriture du marsouin (*Phocaena phocaena*) et les facteurs influençant son abondance, les maladies chez le saumon et la truite élevés dans des viviers, les échelles à poissons dans les pays membres, et la proposition d'une réorganisation du travail du Comité sont discutés et quelques recommandations sont adoptées.

Le Comité est d'avis que les propositions de réorganisation du Comité du Saumon et de la Truite telles qu'elles sont suggérées par MM. Hult et Wimpenny ne sont pas désirables car un changement pourrait à l'avenir causer des difficultés dans le travail de ce Comité, si les propositions sont adoptées dans leur ensemble.

Le Dr. A. E. J. Went est réélu Président.

II. Communications

1. Maladies du saumon et de la truite avec référence particulière aux poissons élevés artificiellement.
   (a) I. W. Smith: "Account of work on salmonid diseases in Scotland, 1955—56".
   (b) Erich Tack: "On the extent, characteristics and probable causes of a dangerous, recently-epidemic disease of rainbow trout stocks in the pond cultures of Germany and a few neighbouring countries".
   (c) Dr. Besse: "L'anémie pernicieuse de la truite".
2. G. V. Nikolsky: "On investigations of salmonid fish in the eastern part of North Atlantic carried out in the U.S.S.R.".
3. H. Kallenberg: "Smolt transformation in salmon with special reference to carbohydrate metabolism and migratory behaviour".
4. F. Chrzan: "Results of investigations on salmon and trout in Polish fisheries".
5. G. Alm: "Notes regarding the salmon fisheries in the Baltic in recent years".
6. R. Kändler: "The present situation of the German salmon fishery in the Baltic".
7. S. Zárnecki: "Winter and summer races in the salmon and sea trout of the Vistula River".
8. Dr. Skrochowski: "The migration of sea trout smolts of the Vistula River".
9. B. Carlin donne un exposé du marquage du "smolt" dans la Baltique.
10. A. E. J. Went: "The origin of salmon caught in drift nets along the Donegal coast of Ireland".
11. M. C. J. Kerswill donne un bref exposé des recherches sur le saumon et la truite sur la côte est (Atlantique) du Canada.

III. Programme de Travail

Le Comité décide de poursuivre le marquage de saumons et de truites de mer à tous les stades, et de

faire, si possible, une comparaison des résultats obtenus par l'emploi de marques de types divers.

IV. Recommandations

Les recommandations suivantes sont adoptées par le Comité:—

(a) Des données relatives à l'apparition des maladies chez les poissons élevés dans des viviers seront présentées de temps à autre aux séances de ce Comité.

(b) Les pays membres sont invités à faire des échanges d'œufs de saumon et de truite afin de permettre des études scientifiques.

(c) Les pays membres soient invités à fournir tous les détails relatifs aux échelles à poissons du saumon et de la truite établis dans leurs pays respectifs, ceci dans le but de rédiger un manuel sur ce sujet.

(d) Les pays membres sont priés d'étudier la nourriture du marsouin (*P. phocaena*) dans la Baltique ainsi que les facteurs déterminant son abondance au cours des différentes années.

Comité des Mollusques et Crustacés

Le Dr. H. A. Cole préside

I. Compte-rendu

Le Dr. Cole annonce aux membres qu'à la demande du Président du Conseil il a pris part à la place du Dr. Havinga au Comité Consultatif, le Dr. Havinga étant empêché pour raison de santé, de présider le Comité.

L'Irlande, appuyée par le Danemark, propose que le Dr. Cole exerce les fonctions de Président à la séance.

Le Comité étudie un memorandum de MM. Hult et Wimpenny proposant des changements dans l'organisation du Comité. Après une longue discussion au cours de laquelle on rappelle à maintes reprises la nature spéciale du travail fait par les conchyliologues et le besoin d'un Comité ayant des pleins pouvoirs la resolution suivante, proposée par la France, secondée par l'Ecosse, est adoptée sans objection:—

"Le Comité est d'avis que les propositions faites par MM. Hult et Wimpenny ne conviennent pas à ce Comité, étant donné que les espèces et les sujets couverts par le Comité des Mollusques et Crustacés s'attachent à plusieurs secteurs. Les modifications proposées causeraient des difficultés dans la mise en œuvre des recommandations concernant les mollusques."

Le Rapport Administratif et les *Annales Biologiques* sont adoptés sous réserve de quelques petites corrections. Il est proposé qu'à l'avenir le Rapport Administratif soit abrégé.

A la demande unanime, les membres du Comité envoyent un télégramme au Dr. Havinga, exprimant leurs regrets pour son absence, et leurs vœux de prompt rétablissement, et leurs remerciements pour les excellents services rendus au Comité.

Le Dr. H. A. Cole est élu Président pour l'année à venir.

II. Contrôle Sanitaire

Le Dr. Cole donne un compte-rendu des études comparatives des méthodes françaises et anglaises effectuées aux laboratoires de Conway et de Burnham-on-Crouch. Des analyses d'eau ainsi que de mollusques ont été faites. En général la méthode française a donné des résultats inférieurs à ceux de la méthode anglaise, dans le rapport d'environ 1:1·5. La méthode française en est au stade de développement, mais grâce à M. Boury des renseignements à jour ont été fournis. Les épreuves comparatives seront poursuivies et l'année prochaine un nouveau rapport sera soumis.

Le Dr. Höglund annonce qu'un grand nombre de cas de jaunisse a été détecté à la suite d'une consommation d'huîtres polluées provenant d'un réservoir de barrage suédois. Au cours de la discussion qui s'ensuit il est révélé qu'aucun cas de jaunisse se rapportant aux huîtres n'a été précédemment rapporté. Le Dr. Höglund déclare qu'à la suite de cette affection, la Suède établira un système de contrôle sanitaire des coquillages.

III. Communications

B. Havinga: "The influence of the shrimp fishery (*Crangon vulgaris*) on the stock".

E. Smith: "Survey of investigations on West Greenland deep-sea prawns (*Pandalus borealis* L.)".

L. Marteil: "Prévision des émissions des larves chez *Ostrea edulis* L. en Bretagne-Sud".

P. Trochon: "La fixation en claires des larves de l'huître plate *Ostrea edulis*".

L. Faure: "Essai de repeuplement en homards d'une région de la côte bretonne".

P. Lubet: "Action des stimuli externes sur l'émission des gamètes chez *Mytilus edulis* L.".

R. H. Baird: "Some notes on the swimming behaviour of escallops (*Pecten maximus* L.)".

H. Mason: "*Nicothoë astaci* Audouin and Milne Edwards on the gills of Orkney lobsters".

A la suite d'une discussion sur la communication de M. Mason il est proposé que les membres récoltent des renseignements sur l'installation et l'influence du parasite du homard, *Nicothoë*, et que les résultats soient présentés à la prochaine réunion.

Comité Hydrographique

Président: Dr. G. Böhnecke

I. Compte-rendu

La liste des membres du Comité est revue, mais aucune modification n'y est apportée. Le Rapport Administratif du Comité pour 1955 est distribué.

L'Hydrographe fait un rapport sur le travail effectué par le Service Hydrographique depuis la dernière réunion.

A ce propos, le retard apporté à la publication du *Bulletin Hydrographique*, causé par des difficultés à rassembler les données, est discuté. Le Lt.-Cdr. Lumby et le Dr. Tait insistent sur l'importance d'avoir toutes les données de chaque année rassemblées dans un volume, au lieu de publier d'abord un volume principal pour gagner du temps, puis un appendice. Le Comité est d'accord sur ce point de vue.

A la demande du Président, le Dr. Lednev annonce au Comité que les données hydrologiques russes récoltées par l'U.R.S.S. depuis le 1er janvier 1956 seront adressées au Conseil pour publication.

Une extension possible du secteur couvert par les Cartes Hydrographiques Synoptiques vers le nord et vers l'ouest est considérée, mais étant donné le nombre limité d'observations disponibles, on estime, qu'une telle extension ne pourra pas être réalisée. D'autre part les cartes du secteur couvrant le Cattégat, les Belts et la Baltique ouest pourront être préparées.

La Recommandation 1 est adoptée.

Le Lt.-Cdr. Lumby rend compte du travail effectué par le Sous-Comité Consultatif pour la Préparation des Cartes Moyennes de Température et de Salinité de Surface.

Sur la demande du Président du Conseil, le Professeur Sverdrup, le mot "Consultatif" dans le nom du Sous-Comité est supprimé.

La Recommandation 2 est adoptée.

M. Hermann rend compte du travail effectué par le Sous-Comité chargé d'une révision de la Méthode Standard de Détermination de la Salinité. Il est regrettable qu'un "pont-de-Wenner" soit pas à la disposition du Comité.

A cet égard le Dr. Carruthers attire l'attention des membres sur le fait qu'un pont-de-Wenner modifié est en construction au "British National Institute of Oceanography". Il est demandé à M. Hermann de prendre contact avec l'Institut, au sujet de ce nouveau modèle.

Le Président rend compte du travail du Sous-Comité pour l'Année Géophysique Internationale 1957—1958. Le Sous-Comité a tenu une réunion au cours de laquelle l'état actuel du programme des recherches a fait l'objet d'une discussion. Une bonne volonté générale de coopérer a été exprimée. Les nouveaux plans de l'U.R.S.S. et de l'Espagne sont acceptés. Ils fourniront des suppléments d'une grande valeur et étendront le secteur couvert jusqu'ici. En plus de ces plans quelques modifications de moindre importance sont annoncées. Ainsi, si deux navires travaillent simultanément dans la même région il serait préférable de décaler certaines sections de façon à suivre un système de sections équidistantes. Si les bateaux travaillent dans la région à des époques différentes des sections identiques seront choisies. Une carte comprenant le programme complet sera distribuée, dès qu'il sera connu et avant la prochaine réunion.

Le Professeur Groen rend compte du travail du Sous-Comité chargé d'examiner les possibilités de rassembler et publier les données des bathythermographes.

Le Professeur Sverdrup est d'avis que bien qu'il soit désirable de demander que les extraits des bathythermogrammes soient envoyés au Service Hydrographique pour les archives, il est de moindre importance d'envoyer les reproductions seulement.

Le Dr. Lednev préfère que les données de température recueillies à l'aide des bathythermographes soient publiées au lieu d'être seulement inclues dans les archives.

Après que le Comité ait évalué les frais et le travail relatifs à la publication des extraits de bathythermogrammes, la Recommandation 3 est approuvée.

Le Président ouvre une discussion ayant trait aux études sur la remontée des eaux sub-arctiques au-dessus des seuils entre le Groënland et l'Ecosse.

Après la présentation des communications, ceux des membres s'intéressant à l'étude pratique de ce problème se sont réunis. A cette réunion les pays suivants sont représentés: le Danemark, la Finlande, l'Allemagne, l'Islande, la Norvège, l'Ecosse, la Suède et l'U.R.S.S. Après la discussion, un Sous-Comité comprenant MM. Dietrich, Hermann et Tait (Président) est créé pour formuler un avant-projet de recherches sur ce problème et distribuer des plans à tous les pays membres aussitôt que possible.

Des discussions préliminaires ayant eu lieu à Copenhague au cours de la réunion du Conseil entre la Finlande, l'Allemagne, la Suède et l'U.R.S.S. sur la coordination des recherches hydrologiques dans la Baltique, le Comité Hydrographique recommande que des plans détaillés soient fixés à une réunion des membres intéressés, qui aura lieu à Helsinki au mois de mars 1957 à la date qui conviendra le mieux.

A ces fins un Sous-Comité comprenant MM. Hela (Président), Krey et Kullenberg est créé.

Des programmes provisoires des travaux hydrologiques dans les divers pays sont tracés ainsi qu'un aperçu des observations de routine effectuées sur les trajets déterminés où aux stations fixes par les bateaux de recherches, les navires de commerce, les bateaux feux, etc.

Le Président attire l'attention des membres sur la question de l'organisation des Comités, qui a fait l'objet d'une discussion au Comité Consultatif.

Le Dr. Böhnecke est unanimement réélu Président.

II. Communications

Les communications suivantes sont présentées:—

J. N. Carruthers: "Some simple new instrumentation for the observation of currents, waves and wire angle". MM. Lumby, Kullenberg et Sverdrup prennent part à la discussion.

F. Hermann: "Influence of overflow over the Scotland-Greenland Ridge on the bottom water of the northern North Atlantic."

G. Dietrich: "On fluctuations of deep-sea circulation in the northern North Atlantic Ocean."

A la discussion qui suit la lecture de ces deux communications MM. Groen, Sverdrup, Richards, Tait et le Président prennent part.

U. Stefánsson: "The Siglufjörður section. Preliminary report on serial chemical and hydrographical investigations." MM. Carruthers, Hermann, Lumby, Orr, Dietrich et le Président prennent part à la discussion.

L. van Meel: "Le milieu marin au bateau-phare 'West-Hinder'". (Présentée par l'Hydrographe).

W. Krauss: "Some remarks on recent charts relating to the distribution of temperature, salinity and density at the surface of the northern North Atlantic Ocean." Lt.-Cdr. Lumby prend part à la discussion.

F. Koczy: "The distribution of radioactive elements in the ocean." MM. Sverdrup, Dietrich et le Président prennent part à la discussion.

J. Eggvin: "A bank discovered between Jan Mayen and Greenland and the water around it." MM. Dietrich, Richards et le Président prennent part à la discussion.

III. Recommandations

1. Le Comité Hydrographique recommande que les Cartes Hydrographiques Synoptiques actuelles incluent les régions du Cattégat, des Belts et de la Baltique ouest, le nombre des observations étant trop limité pour permettre une extension vers le nord et l'ouest. L'extension proposée impliquera des frais supplémentaires de 600 kr. par an.

2. Le Comité Hydrographique recommande:—

(a) Que M. Smed soit coopté membre du Sous-Comité pour la Préparation des Cartes Moyennes.

(b) Que le Sous-Comité se réunisse soit à Copenhague soit à Hambourg suivant les exigences, en 1957. Les frais seront approximativement de 2,500 kr.

3. Le Comité Hydrographique recommande:—

(a) Que les pays membres soient invités à transmettre au Service Hydrographique non seulement des listes indiquant les lieux et dates des observations recuillies au bathythermographe et faites par chaque pays, mais aussi les copies des extraits des bathythermogrammes. Aux extraits, qui seront présentés sur des formules standard, seront attachées les feuilles corréspondantes des livres du loch.

(b) Que des listes des lieux et dates des observations recuillies par le bathythermographe soient publiées dans le *Bulletin Hydrographique* de manière qu'à chaque observation il soit indiqué si l'extrait est disponible au Service Hydrographique. Sinon, une référence sera faite à l'institution possédant les documents publiés dans le *Bulletin Hydrographique*.

(c) Que les extraits des bathythermogrammes reçus par le Service Hydrographique soient reportés sur cartes perforées. Les frais seront approximativement de 300 kr. par an.

(d) Les pays membres doivent, comme d'habitude, continuer à envoyer les listes des positions et des dates des observations recuillies par le bathythermographe jusqu'à ce que les détails du projet, surtout en ce qui concerne une formule standard pour les extraits, soient élaborés et acceptés par le Conseil.

Comité du Plancton

Président: Prof. E. Steemann Nielsen

I. Compte-rendu

Le Président rend hommage au regretté Dr. C. Rees.

La liste des membres est vérifiée. Les rapports sur les travaux effectués en 1955 sont adoptés. Le Dr. G. Thorson présente un rapport du Dr. J. H. Fraser sur l'avancement de la publication des *Fiches d'Identification du Zooplancton.*

On discute la possibilité de tenir une réunion sur les "Mesures de la production de base dans la mer" à l'occasion de la réunion du Conseil en 1957; voir la Recommandation ci-dessous.

Le Professeur J. Krey présente un projet de publication des monographies du plancton. Il est décidé que le projet sera étudié par le Professeur Braarud, le Professeur Krey et le Président avant la réunion en 1957.

Le Professeur E. Steemann Nielsen est réélu Président.

II. Communications

Les travaux suivants sont lus:—

P. M. J. Woodhead & J. D. Riley: "Separation of sexes of *Calanus finmarchicus* in the fifth copepodite stage."

K. Banse: "On the behaviour of copepods in the stratified waters in the Bight of Kiel."
A. P. Orr & S. Marshall: "Seasonal changes in the respiration of copepods."
J. Grøntved: "Investigations on the productivity of the microscopic bottom vegetation."
N. Jerlov: "A method of quick determination of the particle content in a water sample."
E. Steemann Nielsen & Vagn Hansen: "Measurements of the rates of gross production and net production by the carbon-14 technique."
I. Hallgrimsson: "A short-cut method for estimating zooplankton composition while at sea."

III. Recommandation

Le Comité du Plancton demande qu'une réunion spéciale sur les "Mesures de la production de base dans la mer" soit tenue à l'occasion de la réunion du Conseil en 1957. La réunion durera 2(3) jours (vendredi et samedi avant la réunion du Conseil).

Les dépenses relatives aux invitations des spécialistes des pays n'étant pas représentés auprès du Conseil pourront être couvertes par une allocation de l'U.N.E.S.C.O. Une allocation de ce même organisme pourra probablement être obtenue pour couvrir les frais de publication.

Comité Statistique

Président: Dr. J. Lundbeck

I. Compte-rendu

Le *Bulletin Statistique* pour 1954 est présenté au Comité. Le Comité prend spécialement note du Tableau 7, qui est un nouveau tableau comprenant des données sur "l'effort de pêche". Ce tableau est fondé sur les informations de huit des pays membres.

Le Comité étudie une proposition soumise par le Comité du Hareng concernant une décomposition des statistiques des harengs de la Mer du Nord en régions plus petites et par mois. Le Comité est d'avis de publier les informations de ce genre dans le *Bulletin Statistique*, compte tenu de "l'effort de pêche".

Le Comité discute ensuite l'introduction des cartes mécaniquement perforées en coopération avec l'I.C.N.A.F. On estime que les cartes perforées introduites l'année dernière couvrent d'une façon effective les besoins actuels du Conseil mais qu'il sera peut-être nécessaire plus tard d'employer le système I.B.M., proposé par l'I.C.N.A.F.

Le Secrétaire Général est prié de se mettre en contact avec les membres du Comité Statistique en leur demandant 1) s'ils jugent nécessaire de sous-diviser les secteurs statistiques du Conseil en régions plus petites, et 2) d'envisager plus particulièrement une revision éventuelle des limites des secteurs statistiques du C.I.E.M. dans le secteur de l'I.C.N.A.F.

Le Dr. J. Lundbeck est réélu Président.

II. Communication

J. Lundbeck: "Some examples of misleading possibilities in effort statistics."

III. Recommandations

1. Le Comité recommande que le Conseil demande au Ministère Danois des Affaires Etrangères de faire une démarche auprès des pays n'ayant pu fournir des statistiques relatives à "l'effort de pêche" en soulignant la nécessité du fait qu'à l'avenir de tels envois soient fournis sous une forme aussi détaillée et complète que possible. Il est très important que ces envois parviennent au Secrétaire Général au mois de septembre qui suit l'année à laquelle ils se rapportent.

2. Le Comité Statistique se rend compte d'un besoin urgent de recevoir des données statistiques sur le rendement et "l'effort de pêche" relatifs à toutes les espèces capturées dans le secteur du Conseil à toutes les méthodes de capture, sous-divisées en régions et dans le temps, et il se rend également compte du fait qu'il existe un désir croissant parmi les différentes organisations internationales d'établir une standardisation au point de vue des captures, de la classification et de l'établissement des statistiques.

Le Comité est d'avis que bien que les facilités d'établissement des statistiques soient actuellement suffisantes aux besoins du Conseil, le volume toujours croissant des données ainsi que le besoin de standardisation demandent que l'on considère sérieusement l'introduction — dans un avenir proche — de méthodes de classification mécanique.

Les membres du Comité pensent que le Conseil doit prendre des dispositions permettant la discussion avec les autres organisations internationales de la question d'une standardisation de la classification et de la méthode de traitement des données.

3. Le Comité Statistique recommande que les secteurs statistiques employés par l'I.C.N.A.F. soient indiqués dans le *Bulletin Statistique* à la place de la carte actuelle de la côte atlantique de l'Amérique du Nord.

2ÈME PARTIE

RAPPORT ADMINISTRATIF

REPORT

of

ADMINISTRATION FOR THE YEAR ENDING OCTOBER 31st 1956

I. General

Composition of the International Council

Delegates

Norway has appointed Professor JOHAN T. RUUD as Delegate with Mr. G. ROLLEFSEN as Senior Delegate.

Composition of the Bureau

No change.

Committees and Editors

At the 44th Council Meeting, October 1956, Mr. O. AASEN, Norway, was elected Chairman of the Herring Committee instead of Mr. DEVOLD, who has relinquished his chairmanship owing to a two years engagement in Brazil. Dr. H. A. COLE, England, was elected Chairman of the Shellfish Committee. Editorships remained the same as in the preceding year.

Meetings

A meeting of the Bureau took place in London on 7. May, and was attended by all members and the Chairman of the Consultative Committee.

II. Central Office

Staff

On 1. November, 1955, Miss M. HÄNSCHELL was transferred from the Publication to the Administrative Department and a new assistant was engaged to the Publication Department, Miss I. ANDERSEN.

Mrs, H. HARRIS has left her position in the Hydrographical Department and Mrs. R. LARSEN has been engaged to replace her.

Publications

	Issued Vols.	In preparation Vols.
Rapp. et Proc.-Verb...	140, I–III; 141	142
Annales Biologiques...	11	12
Journal du Conseil....	21, 2-3; 22, 1	22, 2
Zooplankton Sheets ...	50–60	61–65
Bulletin Statistique ...	39 (for 1954)	40
Bulletin Hydrogr.....	for 1952	for 1953
Synoptic Charts	July 1955–May 1956	June 1956

Income and Expenditure Account for the Financial Year $^{1}/_{11}$ 1955—$^{31}/_{10}$ 1956

EXPENDITURE

	D. kr.	D. kr.
I. Incidentals		
President	5,000.00	
Chairmen of Committees	20,061.07	25,061.07
II. Salaries		
General Secretary	20,000.00	
Administrative Department:—		
Assistant Secretary	13,246.64	
Assistant	10,014.44	
Publication Department:—		
Assistant Secretary	13,246.64	
Assistant	10,104.28	
Statistical Department:—		
Assistant Secretary	13,246.64	
Hydrographical Department:—		
Hydrographer	21,479.44	
1st Assistant	11,984.24	
Clerical Assistant	5,937.04	
Part-Time Assistant	4,698.54	
Part-Time Assistant	4,159.83	128,117.73
III. Office Expenses		
Rent, Light, and Heating	11,531.05	
Stationery	11,316.95	
Postage, Telephone, etc.	3,705.57	
Furniture	9,768.93	
Insurance	1,014.25	
Upkeep	4,493.87	
Miscellaneous	10,608.69	
Expenditure in connexion with Council Meeting	3,959.57	56,398.88
IV. Travelling Expenses		10,494.29
V. Publications		
Printing	71,068.43	
Translation	1,682.36	
Distribution	1,331.10	
Editor of *Journal du Conseil*	3,747.69	
Editor Assistant	1,500.00	
Editor of Plankton Sheets	1,039.96	80,369.54
VI. Pensions		
Miss I. Hansted	6,870.48	
Miss E. Brønniche	9,804.00	
Miss M. Rehder	9,804.00	
Contribution, Pension Insurance and Saving	8,258.91	34,737.39
Unexpended vote carried to Creditors		24,855.00
Excess of Income over Expenditure		38,671.58
		398,705.48

RECEIPTS

	D. kr.	D. kr.
I. Contributions		
Belgium	20,000.00	
Denmark	20,000.00	
Finland	10,000.00	
France	40,000.00	
German Federal Republic	40,000.00	
Iceland	20,000.00	
Ireland	15,000.00	
Netherlands	20,000.00	
Norway	20,000.00	
Poland	20,000,00	
Portugal	15,000.00	
Spain	20,000.00	
Sweden	20,000.00	
United Kingdom	40,000.00	
U. S. S. R.	40,000.00	360,000.00
II. Interests		
on Bank Deposits	6,724.27	
on Investment Reserve Fund	4,513.50	
on Pension Fund	4,873.50	16,111.27
III. Sale of Publications		21,431.36
IV. Contribution from Woods Hole Oceanographic Institution and Texas towards collecting and publishing American and Texan observations in Bulletin Hydrographique		1,162.85
		398,705.48

Balance Sheet 31st October 1956

LIABILITIES

	D. kr.	D. kr.
Capital Reserve		
Capital reserve fund	72,654.68	
Excess of income over expenditure	38,671.58	
Difference in exchange	1,162.00	112,488.26
Pension Fund		106,564.16
Creditors		
Contributions for 1956/57 prepaid	271,692.84	
Chairmen Incidentals	1,275.00	
Sale of Series of Publications from Library	7,250.54	
Unexpended vote	24,855.00	305,073.38
		524,125.80

ASSETS

	D. kr.	D. kr.
Cash at Sparekassen	363,408.24	
Cash at Post Office	135,98	
Cash in hand	542.55	364,086.77
Bonds		
$4^1/_2$ % Danish State Bonds redeemable in 1997, nominal value kr. 211,500.00 at cost 171,082.50, market value 31/10 1956, $75^1/_2$ %		159,682.50
Debtor, offprints		356.53
		524,125.80

(sign.) Á. Friðriksson,
General Secretary

Else Hedegaard

I have compared the above Balance Sheet with the Books and Vouchers of the Council, and certify that it is in accordance therewith. I have verified the existence of the cash on hand and at bankers as well as of the Treasury Bonds.

Copenhagen, November 27th 1956.

(sign.) Karl Sørensen,
Statsautoriseret Revisor
(State-authorized Accountant)

We have scrutinized the foregoing Accounts and Balance Sheet and are satisfied that they are correct.

H. U. Sverdrup — Á. Vedel Tåning — E. Leloup
J. Cuesta — J. Claussen — G. Nikolsky
B. Dinesen

REPORTS

of

AREA AND OTHER COMMITTEES

Distant Northern Seas Committee

1955

By Å. Vedel Tåning

Member countries operated research vessels in the Distant Northern Seas during 1955 as follows:—

Belgium: None.
Denmark: "Dana", "Adolf Jensen", "Tornaq".
England: "Ernest Holt".
Finland: None.
France: "Président Th. Tissier".
Germany: "Anton Dohrn".
Iceland: "Ægir", "María Júlía".
Ireland: None.
Netherlands: None.
Norway: "G. O. Sars", "Johan Hjort", "Thor Iversen".
Scotland: "Scotia".
U.S.S.R.: "Professor Mesjatzev", "Akademic Berg".

Observations were also made by specially chartered vessels, fishery inspection vessels, and ordinary commercial vessels, e. g., the Danish motor cutters "Immanuel" and "Akranes", and the inspection vessel "Thetis"; the Icelandic trawlers "Jón Thorláksson" and "Harðbakur", and the motor boat "Auðbjörg", and several Norwegian fishing vessels.

The data will be published and the results reported in the *Bulletin Hydrographique*, *Annales Biologiques*, and other publications of the Council, as well as in national publications. Some information not included in this report may be found in the administrative reports of the special committees of the Council.

Denmark

Faroese Waters and the Northern Atlantic (Å. Vedel Tåning).

During June the research vessel "Dana" operated 10 stations in the Faroe-Shetland Channel, 14 stations round the Faroes, and 121 stations on the herring grounds north of the Faroes in early July; 21 stations were worked between the Faroes and East Greenland; and during July and partly August 97 stations were worked in the Labrador Sea and West Greenland waters. A section (25 stations) from Cape Farewell to the English Channel was run in late August.

Hydrographic observations were made on 185 of the "Dana's" stations in the Distant Northern Seas area, and all the principal routine sections were run as usual. The bathytermograph was operated at 86 stations. Plankton samples were secured on representative series of stations (stramin net, 109 stations; Hensen net, 78 stations; plankton indicator, etc., 94 stations). In addition, 34 plankton production analyses were carried out at both oceanic and coastal stations (the ^{14}C method was used). Different kinds of trawl were operated at 15 stations.

In the Faroe area proper the quantitative study of the occurrence of the eggs and fry of cod, haddock, and saithe was continued in March-April (48 Hensen-net hauls and several stramin-net hauls). Cod from commercial catches were measured and otoliths collected as usual; 2220 otolith samples and 3005 measurements were secured. In addition, 477 cod were tagged and released at positions round the islands. Material was also obtained for age assessment of haddock, tusk, ling, saithe, lemon sole, plaice, witch, and halibut.

The herring investigations in the area north of the Faroes were carried out during June in collaboration with the Icelandic and Norwegian research vessels. The "Dana" operated north of the Faroes to about 67° N. Lat. and between about 1° W. Long. and eastern Iceland.

West Greenland Waters (Paul M. Hansen).

Offshore Work:

The "Dana" operated off West Greenland from 9. July to 13. August. The M/C "Adolf Jensen" worked on the banks at various times from March to September. Most of the hydrographic observations were made on 8 sections of 65 stations; the bathythermograph was used at 24 stations. Pelagic plankton hauls were made with the 2 m. stramin net at 50 stations; vertical hauls with the Hensen net at 27 stations. Observations of productivity were made at 13 stations by the ^{14}C method.

Coastal Waters and Fjords:

The "Adolf Jensen" worked throughout the year between about 60° and 67° N. In August the M/C "Immanuel" continued the investigations begun in 1953 in the Julianehåb district. The M/C "Tornaq" worked during the summer in the Sukkertoppen and Godthåb districts. Part of the material collected by the "Adolf Jensen" and "Tornaq" was examined at the field laboratory in Godthåb.

Spotted Wolffish (*Anarrhichas minor*). The distribution of post-larvae was studied. Fishing experiments with longlines were carried out. Otoliths and length measurements were collected for studies of growth and composition of the stock. Tagging experiments were made.

Greenland Halibut (*Reinhardtius hippoglossoides*). The distribution of post-larvae was studied. Fishing and tagging experiments were made. The relation between length and weight was studied.

Halibut (*Hippoglossus hippoglossus*). Fishing experiments were made and otolith samples and length measurements collected.

Redfish. The distribution of post-larvae was studied. The relation of length to weight was studied. Otolith samples were collected.

Capelin (*Mallotus*). Otolith samples and length measurements were obtained.

Deep-Sea Prawns (*Pandalus borealis*). Trawling experiments were carried out from the "Adolf Jensen" and from the "Immanuel". Samples for studies of growth and the age composition of the stocks were collected throughout the year in the Godthåb and Julianehåb districts.

England

(G. C. Trout).

Seven cruises were made to the Barents Sea, one being to the Murmansk plaice grounds in January/February, where some 200 plaice were tagged with yellow Petersen buttons, 600 otolithed, 2,000 measured and sexed, and stages of maturity recorded for a total of 700. A small number (30) of these plaice were transported to the W. Dogger Bank area, marked, and released. The collection of routine plankton samples was done on four cruises simultaneously with hydrographic observations.

Finland

(Ilmo Hela).

No work was carried out at sea in the area.

France

(Institut des Pêches).

Investigations were carried out on Svinö bank (Romsdal bank), between 62° and 63°30′ N., during the oceanographic cruise of the "Président Th. Tissier". Studies of the bottom sediments (geological dredgings), bottom profiles (soundings, etc.), and distribution of the fauna, especially of the commercial species, were carried out (by dredging and trawling).

Germany

(A. Kotthaus).

Work at Sea

Thanks to the new research vessel "Anton Dohrn", German work at sea was intensified considerably in 1955 compared with the previous years, when no research vessel was available and the work had to be carried out on board commercial fishing vessels.

In 1955 four cruises of the "Anton Dohrn" were made in the Distant Northern Seas area. In general, fisheries research was combined with hydrographical and biological investigations.

Cruise 1 (18.IV.—6.V.) was made to the northern North Sea, the south-east, south, and south-west coasts of Iceland (Dr. H. Reimer in charge). Investigations were made on various gadoid fish and redfish (length, age, maturity, stomach contents, etc.); 32 trawl hauls were made.

Cruise 2 (26.V.—10.VII.) was to the Irminger Sea, east coast of Greenland, Denmark Strait, south-west, west, north-west, north-east, and south-east coasts of Iceland, "Rosengarten" (Dr. A. Kotthaus in charge).

a) Fisheries biology: Redfish (length, age, maturity, sex composition, stomach contents, relation of occurrence with depth and hydrographical conditions, boundary between the "Marinus" and the "Mentella" types of redfish), and other commercial fishes, e. g., cod, haddock, coalfish, ling, catfish, halibut, etc. (length, age, maturity, etc.). Collection of rare fishes. Search for new fishing grounds. In all 29 trawl hauls were made.

b) Post-larvae fish: The distribution of redfish post-larvae was studied; 97 quantitative vertical hauls were made with the fry net at 84 stations.

c) Plankton: Plankton hauls were carried out at 101 stations, usually from four different depths. Surface plankton was secured at 76 stations.

d) Bottom fauna: On the redfish feeding grounds, and at a few other places, 32 samples were obtained with the van Veen grab in depth varying from 150 to 1250 m. The invertebrate fauna caught in 29 trawl hauls was examined.

Cruise 3 (5.IX.—18.X.) was to the south and west coasts of Iceland, Denmark Strait, east and west coasts of Greenland (Dr. A. Meyer in charge).

a) Fisheries biology: Chiefly investigations on cod, (see the Gadoid Fish Committee), together with investigations on redfish (as described for cruise 2) and other commercial fish. Search for new fishing grounds. Collection of rare fish. 57 trawl hauls.

Cruise 4 (10.XI.—8.XII.) was to the Norwegian coast (Dr. U. Schmidt in charge).

a) Fisheries biology: Chiefly coalfish investigations (see the Gadoid Fish Committee); investigations on redfish and other commercial species as described above.

The 4 cruises together provided the following material for fish other than gadoid fish:—

	Length measurements	Age (Otoliths)	Maturity determination
Sebastes marinus	8,352	1,797	1,106
Sebastes viviparus	765	283	40
Argentina silus.....	435	435	435
Argentina sphyraena	32	32	32
Drepanopsetta platessoides.	213	213	—
Pleuronectes cynoglossus ..	43	43	—
Lepidorhombus whiff	49	49	—
Anarrhichas lupus[1])	48	—	48
Anarrhichas minor[1])	38	—	38
Other species[1]).....	134	—	—

[1]) From cruise 2.

Members of the following institutes took part in the work at sea:—
Bundesforschungsanstalt für Fischerei:—
Biologische Anstalt Helgoland
Institut für Seefischerei
Institut für Netz- und Materialforschung
Institut für Fischverarbeitung
Institut für Fischereibiologie der Universität Hamburg
Deutsches Hydrographisches Institut Hamburg
Institut für Meereskunde Kiel.

Market Investigations

Only redfish were sampled.

	Length measurements		Age determinations
	Number	Kg.	Number
West Greenland.....	4,710	8,900	827
East Greenland "Dohrn Bank"	6,739	15,800	780
Iceland, all fishing grounds	18,890	28,210	4,211
Norwegian coast	11,513	15,100	1,711
Barents Sea	2,727	3,200	833
Spitsbergen.....	400	400	223
Bear Island	865	500	100
Total...	45,844	72,110	8,685

Bremerhaven, Biologische Anstalt Helgoland, Abt. Fischereibiologie)

Samples from all regions together amounted to 5,585 (Hamburg, Institut für Seefischerei).

Iceland

(Jón Jónsson).

During 1955 two research vessels were operated. Four cruises were carried out by the "María Júlía", the main purpose of which was to survey the most important fish stocks, e. g., cod, haddock, and flatfish. Extensive trawling experiments were made all round the coast, especially in Faxa Bay, for studies of density, age, growth, food, temperature, etc. Cod, haddock, and plaice were marked at various localities round the coast.

Between May and September the "Ægir" carried out a hydrographic survey of the Iceland-Greenland-Jan Mayen region (see report of the Hydrographical Committee). The Asdic survey which was started in 1954 off the west, north, and east coasts was continued during July and August, and in conjunction with it, fishing experiments were carried out with the purse seine. Material for the study of the herring-plankton relationship was obtained by means of Hensen-net hauls at 373 stations. For the particulars of the herring material collected from the north and south coast, see the report of the Herring Committee.

The motor boat "Auðbjörg" was chartered for herring tagging (see the Herring Committee) during July and August.

Three cruises were made with chartered trawlers, two with the "Harðbakur" to the fishing grounds off the north and east coast and one with the "Jón Thorláksson" to the east coast of Greenland. The main purpose of these cruises was to study redfish biology and to search for new redfish banks.

The material collected for ten species is listed below (apart from herring). Material was also collected for 17 other species, but this is of purely zoological interest.

Bottom samples were taken at 7 positions round the coast.

Species	Otolithed	Measured	Tagged
Cod	13,098	37,147	2,152
Haddock.....	3,826	9,832	1,972
Redfish	1,258	12,108	—
Plaice.....	3,895	3,391	2,949
Halibut	381	26	—
Lemon Sole	6	333	46
Dab	—	5,314	—
Long Rough Dab	107	4,357	—
Greater Silver Smelt ...	217	428	—
Whiting.....	259	—	—

Ireland

(A. E. J. Went).

No work was carried out at sea in the area.

Netherlands

(B. Havinga).

No work was carried out at sea in the area.

Norway

Se reports of the Gadoid Fish and Herring Committees.

Scotland

(Bennet B. Rae).

Six cruises by the research vessel "Scotia" during 1955 were planned to cover parts of the area of the Distant Northern Seas Committee. The dates and routes of these cruises are as follows:—

1)	1.—19. February:	Butt of Lewis, Faroe Bank, Faroe, North Shetland.
2)	21. April—21. May:	Butt of Lewis, Faroe Bank, West Faroe, Denmark Strait, Faroe, North Shetland.
3)	23. June—28. July:	Butt of Lewis, Faroe Bank, West Faroe, Oceanic Banks.
4)	29. Aug.—7. Sept.:	Butt of Lewis, Faroe Bank, Faroe, North Shetland.
5)	30. Sept.—19. Nov.:	Butt of Lewis, Faroe Bank, Faroe, North Shetland.

As a result of mechanical defects and of continuous bad weather, little scientific work was accomplished on the first cruise. Hydrographic and plankton observations were major objectives on the remaining cruises, with the exception of No. 5, which was chiefly concerned with a study of the vertical distribution of white fish at Faroe by means of an experimental trawl and the Kingfisher echo-sounder. The hydrographic programme on all cruises, in addition to the sea temperature and salinity observations, included a study of the oxygen and phosphate content of the water at specific points. On cruise 2, which covered a survey of west Icelandic grounds with special reference to the spawning of halibut, fishing was carried out by means of great lines. In addition to hydrographical investigations, cruise 3 included an echo-sounding survey of the Oceanic Banks and of west Faroese grounds for the purpose of studying the characteristics of scattering layers. Apart from the experiments on cruise 5, no trawling was carried out on Faroese grounds.

Sampling of haddock and young halibut caught by commercial trawlers was continued throughout the year on Aberdeen fish market.

The results of these investigations will be considered under their appropriate headings in *Annales Biologiques*, **12**, and in other publications.

Near Northern Seas Committee

1955

By Jöran Hult

Reports of the work carried out have been received from Belgium, Denmark, England, France, Germany, Netherlands, Poland, Scotland, and Sweden. Ireland has reported that no work has been done on the subjects covered by the Committee. Norway has reported to the various committees on scientific subjects.

Belgium

(E. Leloup).

The research vessel "Hinders" carried out a number of cruises for experimental fishing. During these cruises water samples at various depths and plankton samples (net silk No. 3) were collected off different parts of the Belgian coast. Material was also collected for a study of the populations of the marine species and other organisms living in the Belgian coastal waters, with particular reference to the seasonal fluctuations in their numbers.

Denmark

Work at Sea

North Sea. The R/V "Dana" worked in the North Sea on the two occasions, 15. April—3. June and 2. September—1. October. The spring cruises were concerned mainly with a hydrographical survey of the southern and central North Sea, and with studies of the herring and whiting in the area (cf. the reports of the respective committees). Plankton and larval fish were collected (by Hensen and stramin nets) and plaice were tagged. Comparative trawl hauls were made in collaboration with the "Jens Væver". In autumn similar studies of the herring and whiting, together with hydrographical observations were made in the Bløden Ground area and round the Dogger Bank. 352 herrings were tagged. Hensen and stramin nets were used at all stations.

Six cruises were made with the "Jens Væver", 4 of which (in April, July, August, and October-November) were devoted mainly to herring work in the Dogger Bank—Bløden Ground—Clay Deep area. In May, sole investigations were carried out off the coast of Jutland and in June the plaice stock in the Horns Reef area was examined.

As usual, quantitative fishing for young plaice was carried out in the Waddensea from a motor boat in June, August, and October.

Skagerak and Kattegat. Hydrographical stations in the Kattegat and two hydrographical-biological sections across the Skagerak were worked by the "Dana" in April.

The S/S "Biologen" worked in the Limfjord, Kattegat, and Skagerak from 24. March to 28. November. Trawl hauls and hydrographical observations were made in the Limfjord in March-April and July; in the latter period samples were obtained with the Petersen grab. Trawl and ring-net fishing was carried out in the Kattegat in April, May, and November, together with Hensen-net hauls and hydrographical observations.

Similar investigations were carried out in the Skagerak in June, and trawling and hydrographical work was done in November.

In July investigations were undertaken to assess the fishery value of the shallow water areas which it is proposed to reclaim; the work was done with the "Havkatten" and some chartered boats. Fishing was carried out with the Johansen young-plaice trawl along the shores of the Limfjord, Skagerak, and Kattegat from 17. July to 4. August, and also in August and November in the Kattegat.

Investigations of the stock of plaice in the Limfjord were carried out in September, together with hydrographical investigations.

Work on Fish

Plaice and other Flatfish. Quantitative studies of the stock of young plaice in the Waddensea and in the Horns Reef area were undertaken as in previous years. Market measurements were made at Esbjerg on 5 occasions during the year. The size distributions in 250 cutter catches were examined, and age analyses were made from 1,200 otoliths. In April and May 1,021 plaice were marked in the central North Sea.

Quantitative studies were made with the "Havkatten" of the 0-groups of plaice, flounder, and turbot along the Skagerak, Kattegat, and Limfjord shores by means of the Johansen young-plaice trawl. Trawling was undertaken by the "Biologen" for quantitative and qualitative investigations of the stock of plaice and other flatfish.

Market measurements and some age determinations were made at Skagen and Grenaa. Plaice marking was undertaken in connexion with the transplantations of plaice to the inner parts of the Limfjord.

Sole. Mesh-selection and stock composition were studied in the Horns Reef area during May.

Sand-eel. Investigations on sand-eel species were started. Samples taken by stramin net and trawl were examined, together with samples from the cutter catches landed at Esbjerg and Thyborøn.

Other Fish. All other fish caught in the course of the quantitative trawling experiments, including those from hauls with small-meshed trawls for herring and sprat, were measured.

France

(Institut des Pêches).

Une campagne océanographique du navire "Président Th. Tissier" a eu lieu en Mer du Nord en septembre-octobre 1955. Des observations sur la nature (géologie) et le profil du fond (sondages u. s.) ont été effectuées dans la région du Dogger Bank, du Farn Deep et du Devil's Hole. Des coupes hydrologiques ont été faites dans ces régions, ainsi qu'entre Aberdeen et le sud de la Norvège, en suivant approximativement le 57° L. N.

Des observations sur les courants de fond, au moyen du courantomètre Carruthers, ont eu lieu en trois points principaux de la région dite d'Utsire, par 120 à 140 mètres de fond. Une série d'observations sur le Patch et deux autres séries dans le sécteur du Viking Bank.

England

(R. S. Wimpenny).

Work at Sea

During the year there were made, in the Committee's area, 10 cruises by the "Onaway" 20 by the "Platessa", and 18 by the "Sir Lancelot". All the "Onaway" cruises will be found referred to in the Herring and Shellfish Committees' reports and a number of the "Platessa" and "Sir Lancelot" cruises are dealt with in the Herring and Plankton Committees' reports.

Five "Sir Lancelot" and five "Platessa" cruises were made between January and March over the plaice spawning ground between England and Holland to investigate drift. The international plaice investigations along the Texel line were carried out in April by the "Sir Lancelot" and in November by the "Platessa". Cruises dealing with the benthos of the Dogger Bank and Smith's Knoll areas were undertaken by the "Sir Lancelot" in April, June, and September and by the "Platessa" in March and August.

During a plankton survey off the north-east coast of England in June, a census of I-group plaice was carried out by the "Sir Lancelot" and in August the same ship was engaged in hake mesh-selection experiments in the grounds off the south of Ireland. The "Platessa" devoted an August cruise to a test of cotton and sisal cod-ends on North Sea round fish and in the following month another "Platessa" cruise was undertaken to study the sole population off the English and Dutch coast in the south-western North Sea.

Work on Fish

General. Attention was paid during the year to the regulatory requirements of the Permanent Commission, especially in connexion with mesh-selection and the performance of light trawls. Using a shrimp mesh cover and 77 and 70 mm. sisal meshes, factors at the 50 % selection point of 3.8 and 3.9 were obtained for the hake and whiting respectively. It is estimated from these and other results that the 75 mm. mesh should result in an increase of 15 % in the average yield of hake. The mesh-selection factor for haddock was confirmed as 3.3 to 3.4 using double sisal cod-ends.

In connexion with the light trawl question, experiments were made to compare double-braided sisal and double-braided cotton meshes under a covered cod-end. These particular trials did not show the expected difference in selectivity in that cotton was only slightly greater than sisal. Work on this question will be continued bearing in mind the importance of factors other than that of netting material.

Plaice. Work on the plaice spawning grounds in the south-western North Sea was directed to maintaining contact with specific bodies of plaice eggs and larvae in order to find out the conditions leading to the very high mortalities recorded in the past. Two different bodies of larvae were followed for ten days or so and it appeared that survival of the patch that was present in abundant plankton would be much better than that surrounded by very little plankton.

An investigation of the young-plaice grounds between the Texel and Horns Reef by a seiner in the spring showed that the most productive grounds were those off Terschelling and Ameland islands. A major problem revealed by this work was that of sorting and it seems clear that in large-scale transplantation sorting will have to be faced or a mixed population will have to be moved. In June the usual census of I-group fish was undertaken in Bridlington Bay, the abundance of this 1954 brood being found to be rather low.

Length measurements amounted to 106,000 and 35,000 at Lowestoft and Grimsby respectively and 1,800 otolith samples were taken at each port.

Sole. The natural and fishing mortality rates for the North Sea sole have been obtained by analysing war-time changes and post-war trends. The natural mortality rates were from 0·1 to 0·2 and the fishing mortality from 0·6 to 0·8. It has been concluded from this that an increase in mesh up to 80 mm. would be of benefit.

In September a survey of the nursery grounds was made and this showed that the youngest fish were close to the beaches particularly on the English side. Regular market measurements continued to be made on Lowestoft market where over 36,000 individuals were dealt with. In addition 50 otoliths and vertebrae were collected from the market each quarter.

Germany

(Bundesforschungsanstalt für Fischerei).

Work at Sea

During March 1955, a combined cruise by the research vessels "Anton Dohrn", "Gauss", and "Uthörn" was carried out, covering practically the whole of the southern half of the North Sea, between Dover Strait in the south and a line joining Flamborough Head on the English coast to Thyborøn in Denmark. Salinity, temperature, turbidity, nutrients, seston, chlorophyll content, nannoplankton, zooplankton, and fish fry were investigated. In addition trawl hauls were made for studies of the biology of dab and whiting, and some herring samples and bottom samples were taken.

Cruises were carried out by the R/V "Uthörn", of the "Biologische Anstalt Helgoland", and the "Institut für Fischereibiologie", Hamburg, from 1. to 18. May and from 1. to 8. September for investigation of the stocks and biology of plaice, dab, sole, whiting, and other commercial species in the German Bight, as well as of the bottom fauna and the food of plaice.

Hydrographical and plankton observations (including determinations of the biomass by the biuret reaction) were undertaken by the "Institut für Küsten- und Binnenfischerei", Hamburg, with the R/V "Uthörn" in October in the estuaries of the Elbe and Weser and at sea as far out as Helgoland.

Work on Fish

Plaice. The usual age and growth census of the plaice stock in the German Bight was carried out during May and September. The ages and lengths of 3,742 plaice were determined, and the food of 450 plaice was studied in relation to the composition and abundance of the bottom fauna (73 bottom grab samples were obtained). During the March cruise, the abundance, distribution, and age of plaice fry were studied. In addition, 10,506 measurements and 4,289 age determinations were made on samples from 20 cutter landings at the fish market.

Dab. Material for the study of the dab in the North Sea (chiefly as regards age, growth, egg production, maturity, and spawning) was collected on all cruises in the North Sea area, and from inshore shrimpers. A report being prepared shows, amongst other things, that the growth-rate is very slow and the fecundity high in the area concerned. In addition, observations were made of the activity and feeding rhythm of both dab and plaice in the shallower parts of the German Bigth.

It may be noted here that samples of fish caught by inshore fishermen while shrimp fishing were obtained in 13 places on the North Sea coast of Germany from March to December 1955 (863 samples of a total weight of 4,300 kg.).

Netherlands

(L. K. Boerema).

Work at Sea

The "Antoni van Leeuwenhoek" made 33 cruises in 1955, of which six were devoted to the routine trawling for plaice in April and October. Six cruises were made in February and March for plaice larvae investigations. Four cruises dealt with comparative fishing experiments, and 12 with measurements on fishing gear. Three cruises in June and July, and two in December, were allotted to herring investigations.

Work on Fish

Length measurements were made of all commercial fish caught in the routine trawl hauls.

Plaice. Routine trawling along lines seaward from the Dutch coast was carried out, to provide material for study of the year-class strength, density, growth, and distribution of the 0—V-group plaice in the Dutch coastal area.

Plaice eggs and larvae, and also the younger stages of some other fish, were collected on two cruises in the vicinity of the "Texel" lightvessel over an area of 50 × 50 naut. miles. Observations of hydrographical characters, including nutrients, were made simultaneously.

A few beam-trawl catches were made, to study the distribution and density of the youngest bottom stages of the plaice.

Sole. Length data and otoliths were obtained for all soles caught in the routine trawling programme. The material is now being worked up in preparation for studies on growth and year-class strength.

Poland

(Z. Mulicki).

Twenty species of Bryozoa from the North Sea and transition region were examined from the systematic and anatomic point of view. In addition, four Baltic species were also examined.

Scotland

(H. Wood).

During the year the research vessels "Explorer", "Clupea", and "Kathleen" operated continuously within the area, and "Scotia" added to the observations during the course of three cruises to the Faroe Islands, a cruise to East Greenland, and one to the Oceanic Banks west of Scotland.

In spite of interruption by bad weather early in the year, an extensive hydrographic and plankton programme was carried through. In addition to the normal collection of samples of the general phyto- and zooplankton in the area, samples of microplankton were collected for assay of Vitamin B_{12}. Work on free metabolite activity has been maintained and that on basic productivity has been extended.

No plaice tagging was undertaken but a review of data collected between the two wars relative to the ages and movements of plaice is now in an advanced state of preparation.

Records of rare fish reported within the area were considerably fewer than in 1954.

The collection of bottom fauna samples from St. Andrews Bay, Aberdeen Bay, and Smith Bank has been completed. Associated work concerning the food and growth of plaice is now in progress. In this connexion, the stomach contents of over 6,000 plaice have already been examined.

Work on the design and operation of both bottom and pelagic fishing gear has been extended; in this investigation underwater photography has been extensively employed.

Sweden

(J. Hult).

Observations were continued on the consequence of opening, during winter, of certain coastal waters on the west coast of Sweden to herring and sprat trawling, and the influence on the composition of the fish stock and catches of other species in those waters.

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Baltic-Belt Seas Committee

1955

By Aa. J. C. Jensen

Denmark

(Aa. J. C. Jensen).

The work consisted mainly of a continuation of the regular annual census of the stocks of commercial fish. Quantitative fishing by the S/S "Biologen" with the standard trawl was carried out in the Belt Sea in May, June, August, September, October, and December; in the Sound and the Møen area in May, September, October, November, and at Bornholm in August.

Quantitative fishing was undertaken with the 2 m. ring net in the Belt Sea, the Sound, and the Møen area in May-June, and a few hauls were made in the Belts in October. Vertical hauls with the Hensen net were made at the ring-net stations, and at Bornholm in August. Hydrographical observations were made at every plankton station and at certain fixed stations.

The motor boat "Havkatten", together with some chartered motor boats and rowboats, were used for work in the coastal areas which it is proposed to reclaim for agriculture. As in previous years, the task was to assess the value of the fishery there. The gear used consisted mainly of the Petersen and van Veen grabs, a small hand-grab, the Johansen young-plaice trawl (towed by two men) and a newly constructed quantitative round-haul seine.

Quantitative fishing for young flatfish along the shore was carried out from July to October.

Market samples of plaice were taken during the winter months for studying the commercial catches.

Plaice were marked in connexion with the transplantation from the Limfjord, and flounder were marked in Nakskov fjord, on the Great Belt.

The sewage in some harbours was investigated. For observation by the ^{14}C method on basic organic production, see the report of the Plankton Committee.

Finland

(Erkki Halme).

1. Investigations on the small Baltic herring were continued during the summer cruise of the R/V "Aranda". Bottom fauna studies were also made at the same time. (V. Sjöblom and O. Laurell).

2. In connexion with the drift-net fishery for Baltic herring echo-sounder experiments were carried out in Åland waters. (B.-J. Wikgren).

3. Investigations on the relict fauna of the Baltic were continued. (S. Segerstråle).

4. Studies on brackish-water oligochaetes were carried out at the Tvärminne Zoological Station. (Th. v. Bülow, Kiel).

5. The ecology of the brackish-water chironomids in Tvärminne waters was studied. (E. Palmén).

6. The biology of five species of *Mysis* in Tvärminne waters was studied. (P. Pirilä).

7. The neurosecretion of *Gobius microps* and *Phoxinus aphya* was studied by O. Tuurala.

8. Biological studies on *Alburnus lucidus* were carried out by O. Laurell.

9. Plankton samples were examined by K. Purasjoki.

Germany

(R. Kändler).

Work at Sea

See the report of the Hydrographical and Plankton Committees.

Work on Fish

Eggs and Larvae. The survey of spawning was continued by means of regular plankton sampling from the "Fehmarnbelt" lightship, as in previous years. The investigation of the mackerel spawning grounds in the Belt Sea, begun in 1954 on an international footing, was continued. Special cruises were carried out by the R/V "Südfall" in Kiel Bay, Great Belt, and Little Belt in June (15.—16. and 28.—30.) and August (9.—11.). A further voyage was made in October (4.—7.) to determine the conditions prevailing in autumn. Vertical hauls with the Hensen net and horizontal hauls with the Petersen young-fish trawl were made at about 20 stations, to study the distribution of the fish fry, and the transport of eggs and larvae through the Belt into Kiel Bay.

Poland

(W. Cieglewicz).

Benthos

In continuation of the work described in "Reports of the Sea Fisheries Institute in Gdynia" No. 7, on the biological productivity of the bottom of the South Baltic, investigations were carried out on the quantity of bottom fauna (epibenthos) present in the southern Baltic. The data collected from 79 stations are expressed as weight per area (mg./m.^{2}). They are being further elaborated.

Two papers were prepared for publication, one on the ecological requirements of the most important of the South Baltic zoobenthos species, and the other on the zoobenthos of the estuary of the Vistula. The latter is based on the valuable material collected from 360 stations, distributed over the central part of the estuary.

During the period May to August the biomass of the coastal flora in the Vistula estuary was studied with the object of obtaining a more exact estimation of the biological yield in the region.

Work on Fish

Flatfish. Material for investigation was collected from three coastal regions, namely, 1) the feeding grounds in Pomerania Bay, 2) the Bornholm region (mainly during the spawning period), and 3) spawning and feeding grounds in Gdansk Deep.

In all 31 detailed analyses were carried out on 3,920 fish and on 20 large sets of measurements comprising 5,211 fish.

Fishery with the push net was carried out at 6 places on the Polish coast; this yielded 747 0-group flatfish. The catches consisted of flounders (29 %), plaice (4 %), and turbot (67 %).

Eel. Large numbers of eel caught in the estuaries of Vistula and Szczecin were measured.

Freshwater Fish

The problem of the appearance of freshwater fish in catches at sea was studied.

Perch and Pike. Investigations on these species were continued in the estuaries of the Vistula and Szczecin.

Bream. This species was studied in both estuaries. Large numbers of measurements were made and biological analyses carried out. Scales were collected for the biological analyses.

Smelt were studied in the estuaries of the Szczecin. Large numbers of measurements were made and experiments were undertaken to determine the age of the fish from scales and otoliths.

Sweden

(G. Otterlind).

During the period 21. February—26. April 1955 three cruises were undertaken with the "Skagerak" in the southern Baltic; 39 hauls were made with trawls with cod-ends of different mesh-size, ranging from 15 to 75—80 mm. Most of the work, which covered 41 hours of trawling, was done in five regions, ca. 25 naut. miles S.S.E. of Trelleborg, ca. 12 naut. miles W.N.W. of Rønne, ca. 12 naut. miles E.S.E. of Simrishamn, ca. 11 naut. miles S.W. of Dueodde, and ca. 15 naut. miles S.E. of Utklippan. Special attention was paid to the flatfish stocks. Samples were collected of plaice, flounder, and dab, comprising 1372, 1124 and 477 fish respectively. Measurements of length were made for all fish and also analyses for age and maturity for most of the fish.

In summer and autumn, investigations on Baltic herring and cod were made with the "Eystrasalt" in the Gulf of Bothnia, in the Åland Sea, and in the Västervik archipelago (see reports of the Herring and Gadoid Committees).

During October-November, 1350 silver eels were tagged and set free by Mr. S. Sahlin off the south coast of Scania (for methods, see Journ. du Cons., **19**: 277). About 40 % of the tags have been returned. About 27 % of the eels liberated were recaptured in Swedish waters and about 13 % in Danish waters.

Routine plankton and hydrographical observations were made, especially in connexion with the herring investigations.

U.S.S.R.

(T. Dementjeva).

In 1955 work was undertaken in the northern Baltic to study the possibility of expanding the fishery westward of Saaremaa and Khiumaa. Studies have been made annually of the condition and distribution of commercial stocks of cod and Baltic herring in various parts of the eastern Baltic.

Work was continued to study the zonal distribution of feeding organisms of commercial fish in the coastal area of Klaipeda and northern Gulf of Riga.

Comité Atlantique

1955

Par Jean Furnestin

Des rapports sur les travaux effectués dans le secteur du Comité Atlantique ont été reçus des pays suivants:— Danemark, Ecosse, Espagne, Irlande, Portugal et France.

Danemark

(Å. Vedel Tåning).

From 13. to 18. August 1955 a section of stations were operated by the "Dana" from Cape Farewell to about Lat. 51° N., Long. 31° W. and from here along Lat. 51°N. to the English Channel.

A total of 24 pelagic stations were operated. Hydrography on all stations, fishing with 2 m. stramin net on 10 stations; moreover, several measurements of light and 19 ^{14}C determinations were carried out and phytoplankton was collected. The floating trawl was operated on one station.

Ecosse

(J. H. Fraser).

The research vessel "Scotia" worked only a few stations in 1955 in the area of the Atlantic Committee. They were all north of 56°30′ N., and east of Rockall, and as they were part of a more northerly survey they are more appropriately included under Distant Northern Seas Committee. They included observations on hydrography, chemistry, plankton, and pelagic trawling.

Espagne

(F. de P. Navarro).

Une campagne océanographique a été effectuée par le navire "Xauen" pendant les mois d'avril et mai 1955 dans la région du détroit de Gibraltar, avec déterminations de température (1299), Cl $^0/_{00}$ (452), O_2 (427) et phosphates (427), entre la surface et 100 mètres (pour l'étude de la structure thermohaline superficielle) et à 150, 200, 300, 400, 500, 600, 700 et 900 mètres, ainsi que 11 stations ancrées pendant 24 heures pour la mesure des courants.

Une seconde campagne a eu lieu depuis le mois de juillet jusqu'au mois de septembre sur le parcours Malaga, Ceuta, baie d'Espagne, région ibéro-atlantique et "rias" du nord-ouest de l'Espagne, avec un total de 766 opérations, entre la surface et 500 mètres; observations de températures (375), Cl $^0/_{00}$ (284), O_2 (271) et phosphates (285); pêches planctoniques entre 5 et 15 mètres et 222 coups de drague et pêches diverses avec des bateaux auxiliaires.

Les laboratoires de Vigo, Santander et Saint-Sébastien ont effectué des observations régulières dans leurs zones hydrologiques et sur le plancton, ainsi que des études biométriques des espèces les plus importantes au point de vue commercial.

Le nouveau laboratoire de Cadix de l'Instituto de Investigationes Pesqueras a effectué une étude statistique préliminaire des pêcheries de la région sud-atlantique.

Irlande

(A. E. J. Went).

Work on shellfish, salmon and trout, and whiting was continued during the year and these subjects have been dealt with in the reports of the appropriate committees. No hydrographical work at sea was found possible during the year but the usual surface temperatures of sea water at the "Conigsbeg" lightship were taken twice daily throughout the year. Specimens of three rare fishes *Auxis rochei* Risso, *Epinephelus gigas* Brünnich and *Brama raii* Bloch were taken during the year off the Irish coasts. *A. rochei* and *E. gigas* have not been identified previously from Irish waters.

Portugal (Outremer)

(F. Frade).

La mission scientifique de São Tomé a continué en 1955 ses recherches, amorcées l'année précédente, concernant les poissons de mer et la pêche aux îles de São Tomé et Principe, ayant pour but:—

1) Mener à bien une enquête auprès des pêcheurs indigènes des diverses zones de pêche afin de connaître, pour chaque zone, le nombre de pêcheurs et de bateaux, l'ascendance ethnique des pêcheurs et leurs conditions de travail (pêcheurs isolés ou en groupes, en régime de contrat ou autrement), les méthodes de pêche, saisons les plus riches en poissons et espèces les plus fréquentes, la technologie et la destination des produits de la pêche.

2) Constituer une collection de poissons des eaux superficielles pour l'étude systématique et biologique.

3) Essais de pêche à bord du bateau de pêche "Ana Luisa", par des méthodes européennes.

4) Déterminations de temperature, salinité, pH et prises de plancton dans les lieux de pêche.

France et Union Française

(Institut des Pêches).

France

a) Campagne du navire "Président-Théodore-Tissier": au début de mai en Mer Celtique, puis en mai-juin entre Brest, les Açores et la côte ibérique.

Une étude générale de l'hydrologie a été faite en même temps que la localisation des zones où apparaissent les premiers germons (*Germo alalunga*) en surface.

179 stations océanographiques, 864 prélèvements d'eau et mesures de température, ainsi que des déterminations de la teneur en oxygène dissous, en phosphate et en chlorophylle ont été réalisée.

375 échantillons de plancton ont été prélevés.

b) Le bateau-pilote-de-pêche "Donibane" a procédé pendant toute l'année à la détection par ultrasons des bancs de sardines et d'anchois dans le Golf de Gascogne.

Ce travail s'est accompagné de recherches hydrologiques et biologiques sur les Thonidés, les Clupéidés et le plancton.

c) Sortie à bord du chalutier "Général Leclerc" en août sur les lieux de pêche de Bishop. 790 merlus ont été mesurés.

d) Observations hydrologiques régulières dans le bassin d'Arcachon (369 observations) et dans les estuaires de la côte bretonne.

e) Les différentes espèces comestibles pélagiques et benthiques ont été étudiées dans les laboratoires de Roscoff, Lorient, La Rochelle et Biarritz.

Maroc

a) Les deux bateaux de l'Institut des Pêches, le "Jean-François" et l'"El-Hikmet" ont effectué 280 sorties de 1 à 5 jours comportant la détection des bancs de poissons, l'hydrologie et le plancton des secteurs de Safi, Mogador et Agadir.

b) De plus, des travaux d'hydrologie on été effectués en février et mai du détroit de Gibraltar au détroit canarien.

c) La systématique et la biologie d'espèces ichtyologiques (Sparidés, Scienidés, Triglidés, Merluccidés, Clupéidés, Thonidés) et des essais d'acclimatation de Gryphées dans une lagune côtière, ont été poursuivis.

Mauritanie

a) 1,096 relevés de températures et 1,058 déterminations de salinités ont été réalisés à la station côtière, en surface et à la profondeur de 10 m.

b) D'autre part, 1,400 mesures ont été faites sur 5 lignes intéressant la baie du Lévrier dont l'étude hydrologique complète pourra ainsi être faite pendant toute l'année.

c) Une campagne effectuée avec le langoustier "Ma Petite Folie" a eu pour but de recuillir des informations sur l'habitat de la langouste rose (*P. mauritanicus*).

d) On a procédé à l'examen de 1,686 Thonidés (albacore) et à des recherches sur la courbine (*Sciaena aquila*).

Côte d'Ivoire

Un laboratoire des pêches maritimes a été crée à Abidjan. Il sera muni du matériel nécessaire aux études d'hydrologie et de biologie appliquées à la pêche et disposera d'un bateau de recherches de 20 mètres.

Une première liste des poissons comestibles a été relevée, ainsi que le tonnage des espèces capturées.

Afrique Equatoriale Française

La section d'océanographie physique, créé fin 1954, s'est donnée pour première tâche la prospection hydrologique systématique du plateau continental Cameroun — A.E.F. Des stations d'observation ont été créées au Cap Lopez et à Mayumba et de nombreux renseignements concernant les eaux superficielles sont recueillis directement par les soins de la station et par les bateaux de commerce fréquentant ces régions.

A Pointe-Noire même, choisi comme station de référence, les variations de salinité et de température, la transparence ainsi que la teneur en pigments chlorophylliens des eaux côtières sont suivies en détail.

L'étude des courants du plateau continental a été abordée.

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Comparative Fishing Committee

1955

By C. E. Lucas

Reports have been received from six countries concerning their work during 1955, and it is known that a certain amount of work is proceeding in some others, although they are not in a position to report on results at the moment. Reference to the individual reports shows that a wide and most useful range of investigations are proceeding. It is becoming recognized that the activities of this Committee can play a most important part not only in the work of the International Council itself but, through its Liaison Committee, also in the progress made by the Permanent Commission of the Fisheries Convention towards securing improved and generally acceptable methods of conservation.

The very successful meeting of the Committee in October 1955, demonstrated, by the twelve contributions made to it, something of the nature of the results already being achieved. In particular, the keen discussion not only provided agreement on certain recommendations in response to questions posed by the Liaison Committee, but also showed clearly the necessity for further information, definition, or precision in some aspects of the work. It is obviously going to be most important, for example, to secure agreement on the definitions to be applied to different types of gear, as well as to the materials of which they are composed, before one can proceed satisfactorily with recommendations regarding their use under one or other scheme of conservation. Similarly, it is becoming recognized as essential that results (for example, on mesh selection) obtained with one class of gear shall be checked by experiments with others before they can be regarded as of either general or only specific application. Again, the methods and instruments by which such tests are made (for example, mesh-measuring gauges) deserve careful consideration, while for some purposes uniformity may be desirable. It is most fortunate that these matters are receiving attention on the western side of the Atlantic as well as on the eastern, and there is no doubt that the workers on both sides will benefit from the comparisons now being made between methods used and results obtained in the two convention areas.

Belgium

(Ch. Gilis).

At regular intervals, experimental fishing with trawl nets of different widths of cod-end meshes (70, 75, and 80 mm.) were carried out. Each net was used together with a cover net of 60 mm. meshes. The nets were used alternately.

Manipulation of the Material

1) Determination of the catch (fish, shellfish, and other Invertebrae).

2) Recording the number and lengths of all fish. Also the total weight of each species of fish.

The object of these experiments is to study the saving effect of those nets and in particular as regards the sole fishery.

England

(A. R. Margetts).

Experimental investigation of the comparative mesh selections of cod-ends made of different materials —popularly called the selectivity of light trawls— was continued. In an experiment by M.V. "Platessa" using double-braided sisal, double cotton and single cotton cod-ends each covered with small-meshed netting to retain fish escaping from the cod-end, the selection of whiting and haddock by the different cod-ends did not appear to be appreciably different. Thus this experiment did not confirm the findings of earlier experiments; it was, however, possible that the cover netting may have influenced the fishing of the cod-ends to some extent. This experiment confirmed the mesh size/50 % escape length factor for haddock by a double sisal trawl cod-end as 3·3—3·4 and showed the comparable factor for whiting to be 3.7.

A mesh experiment using the covered cod-end technique with double sisal trawl cod-ends for hake from "Sir Lancelot" gave the mesh size/50 % length factor 3·8.

The variation in results of cod-end mesh measurements by different methods of measuring was investigated. It was concluded that the best consistent basis for measurement was that a load of about 6 lbs. should be applied longitudinally and internally between the opposite knots of a mesh; ideally a standard length of time of load application should also be applied. A spring loaded mesh gauge incorporating these requirements and avoiding the possibility of overloading the mesh before the measurement was read off was developed.

Trials of mid-water trawls and depth recorders for use with such trawls were continued. "Sir Lancelot" was successful in catching herring in a single ship trawl and two chartered trawlers made successful commercial catches of herring with a pair-trawl. It was evident from the year's experiments that a greater knowledge and understanding of the behaviour of fish in relation to the trawl on particular grounds

and in particular physiological conditions was a necessary adjunct to widespread development of mid-water trawls.

France

(Institut des Pêches).

Des expériences, au moyen de chaluts à double-poche, ont été effectué à bord de chalutiers, en Mer du Nord, en vue de définir la sélectivité de chaluts de différents textiles et de différents maillages, principalement pour le merlan et pour la sole.

Ces expériences ont été poursuivies à bord du bateau de recherches "Président Th. Tissier", en septembre-octobre 1955, dans la région du Dogger Bank, au moyen de chaluts en manille et en nylon gréés avec des doubles poches. Les observations ont porté sur le merlan.

En outre des mesures concernant la force de traction et la hauteur d'ouverture des engins ont été effectuées.

Germany

(A. von Brandt).

Investigations on Trawl Nets

For herring fishing with ground trawl nets knowledge of the towing speed is considered essential. Although the relation of the towing speed to the amount of the catch has not yet been investigated by us, we have tried to increase the towing speed by the use of suitable perlon trawls.

During a voyage of the fisheries research vessel "Anton Dohrn" the necessary measurements were made on a perlon trawl net. Perlon trawl nets are already used in the German herring trawl fishery, but they are made of too coarse material. Therefore a perlon trawl of sufficient tensile strength was used, which was 56 % less by weight than the normal manila herring trawl, and 44 % lighter than the usual perlon trawl employed in herring fisheries. The following table gives the strengths of wet material of the several parts of the net in kg.:—

Part of net	Manila kg.	Perlon usual kg.	Perlon experimental net kg.
Wing	90	100	62
Square	90	100	78
Belly I and II	90	100	62
Herring Belly	75	100	62
Piece of mesh	110	100	75
Funnel	95	100	75
Cod-end	2×90	2×100	1×150

The towing resistance of the experimental perlon net, however, was only 8 % less than that of the equivalent manila net. The measuring instrument was fitted behind the trawl boards, so that the resistance of the net alone was measured.

Another means of reducing the towing resistance of trawls might be the use of favourable otter-boards. In place of boards of the conventional shape, Süberkrüb-boards were used, which are higher than wide. The friction resistance on the bottom is reduced thereby. When using the otter-boards designed by Süberkrüb, the resistance of the experimental perlon net decreased by 16 % as compared with that of the manila net. However, the angle taken by the Süberkrüb-boards towards the towing ropes—amounting to 22°–28°—was too great. It is expected that the towing resistance can be decreased even further if the boards are adjusted at a smaller angle.

Measurement of Meshes

For measuring meshes of trawl nets a pressure gauge was used which was pushed vertically through the mesh. For practical reasons a pressure of 4 kg. (= 8·8 lb.) was used, because the actual pressure affecting the meshes during fishing might be around that figure (approximately 3—5 kg. or 6·5—11 lb.).

The meshes of a new manila net undergo alterations. On the one hand, the meshes shrink as soon as the net twines get soaked in the water. On the other hand, the meshes increase owing to the contractions of the knots. They are also stretched when the cod-end is lifted on board the vessel. These factors have an uneven effect on the meshes of the cod-end, depending which part of it is concerned, so that the meshes are exposed to the greatest stretch at 3 points:— (a) at the beginning of the cod-end, (b) at the lifting strop, and (c) at the rear opening. In a cod-end with meshes originally of approximately 100 mm. in diameter, the size of mesh had changed after a catch of 3,000 baskets as shown in the following table (series of meshes in a distance of 5 rows being measured at a pressure of 4 kg.):—

At the beginning of the cod-end	90 mm. 78 „ 89 „ 87 „ 86 „ 88 „ 88 „ 94 „
3 meshes before the lifting strop	82 „ 84 „ 84 „
3 meshes before the rear opening of the cod-end	91 „

Depending on the spot where the meshes of the cod-end were measured, a varying result is obtained. It was therefore proposed not to measure horizontal series of meshes, but series parallel to the axis of the cod-end.

Electrical Fishery

The endeavours to apply the electrical fishing technique in sea fisheries are restricted now as before to the use of electric current for narcotizing fishes already caught. This can be achieved by combining the electrical tuna line with commercially manufactured fishing gear, with the objective of killing the

tuna immediately. With the most recently designed gear, the current is switched on automatically as soon as the fish recovers from the narcosis.

For narcotizing sardines caught with a seine net, a gear was used which produces an impulse-current on a new principle. In this a number of condensers are charged in parallel and then discharged by means of a switch designed for the particular gear.

Netherlands

(L. K. Boerema).

A small number of mesh-selection experiments have been carried out by means of the covered cod-end method, in order to study the selection of a small-meshed (4 cm.) cod-end.

Observations have been collected on the variation in the catches of successive 1 hour hauls, made at the same spot. The investigations on the diurnal variation in the catches were continued.

The measurements on angle of attack of the otter-boards, height and width of the trawl mouth, and on the resistance during towing of otter-boards and trawl have been pursued.

Scotland

(C. E. Lucas).

As an introduction to the Administrative Report from Scotland, it seems appropriate to refer to the launching on 21. June 1955 of the new "Explorer", and her commissioning in April 1956. After some comparative fishing experiments between the two vessels, the old "Explorer" will go out of commision.

Scottish research during the year has included further work on pelagic and bottom trawls, underwater diving observations and underwater photography. Trawling experiments have included (a) measurements of headline height variations on a standard trawl when rigged in different ways, (b) measurements of drag, warp spread and speed, (c) herring trawling, and (d) underwater work with model nets, built to the scale of one-eighth and one-quarter. Instruments which have been tested include a gauge for measuring the load in either a moving or a standing warp (both up to 10 tons load and in a lighter version) a differential depth recorder and warp-angle measuring devices.

A number of new mesh-selection tests have been made and all the Scottish selection data have been reviewed in order to provide evidence for the various assessments requested by the Permanent Commission of the International Fisheries Convention. Further experiments on methods of gauging meshes, particularly for scientific purposes, suggest (a) that meshes should be measured under constant load and (b), for reliability and consistency, this load should be exerted along the length of the mesh rather than applied vertically through it. Experiments on other aspects of selectivity in demersal gear continue, while further drift-net mesh-selection experiments have been made, together with comparisons between nylon and conventional net materials. Estimations of the relationship between the catch and fishing effort are also continuing.

While little further practical work has been done, a paper has been published in the Department's series on the reactions of marine fishes to electric currents. Echometer investigations are being continued, and an attempt is being made to assess the value of pound nets in west coast lochs.

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Gadoid Fish Committee

1955

By G. Rollefsen

Reports of investigations carried out during 1955 were received from the following countries:— Denmark, England, France, Germany, Iceland, Ireland, Norway, Poland, Scotland, and Sweden.

Denmark

West Greenland (P. M. Hansen).

Cod. Observations on the occurrence of fry in coastal waters and fjords were made by the "Adolf Jensen" and in Davis Strait by the "Dana". Otoliths and length measurements were obtained for stock analyses. Hauls with the fine-mesh hand seine and the shrimp trawl were made to obtain information on the occurrence of cod of the three youngest age-groups. Tagging experiments were carried out in various regions from Cape Farewell to about 68° N.

Gadus ogac. Otoliths and length measurements were collected.

Danish Waters (J. Knudsen).

Cod and Whiting. Ring-net fishing for larvae was carried out in April and May in the Kattegat.

The S/S "Biologen" trawled in the Kattegat and Skagerak in April, May, June, September, and November to provide material for quantitative and qualitative investigations of the stocks. Similar investigations were made in the Limfjord in March and July.

The quantities and lengths were obtained for small whiting (and other species) caught while fishing with the small-meshed trawl for herring and sprat.

Faroes (J. S. Joensen).

Investigations of the **cod** in Faroe waters was continued in 1955. The data collected from the area comprises measurements of about 5,200 fish, and age determinations for about 2,200 fish; 477 cod were marked.

Observations were made on the occurrence of eggs and 0-group specimens of cod, haddock, coalfish, and whiting by means of the Hensen net at 48 stations in April, and with the 2 m. ring-trawl at 21 stations in June.

England

(G. C. Trout).

Cod. Five cruises to the Barents Sea were aimed primarily at determining the distribution of the cod on the Spitsbergen Bank by means of trawling and echo-sounder surveys. Weather interfered with the sixth cruise, which took place on the Skolpen Bank region. During these cruises a total of 3,605 Lea-tagged cod were released as part of the Anglo-Norwegian programme of mortality estimation.

Length measurements of cod made on the "Ernest Holt" totalled 12,395 (excluding measurements of marked fish) and 2,000 were otolithed for the provision of an age/length key.

The number of length measurements of North Sea cod was increased during the year, the numbers being over 43,000 at North Shields and 3,000 at Grimsby.

Market measurements totalled for cod, 80,000, of which 4,000 were otolithed.

Haddock and Whiting. About 6,000 North Sea haddock measurements made in Grimsby market were sent to the Scottish Home Department Laboratory at Aberdeen and at Lowestoft over 16,000 whiting were measured.

Hake. Three hundred hake were marked with Lea tags in shallow water off the Scottish coast in August. 86 measurements of hake landed at Milford Haven and Fleetwood markets were made during the year.

France

(Institut des Pêches).

Quelques données concernant les rendements de la pêche du merlan dans le sud de la Mer du Nord et la Manche Orientale, entre 1950 et 1955, sont à l'étude.

Des mensurations et des prélèvements d'otolithes ont été effectués sur les stocks de merlans du Dogger Bank et du Farn Deep.

Germany

(Ulrich Schmidt).

Work at Sea

Six cruises with the R/V "Anton Dohrn" were made in 1956. Three of them were devoted mainly to cod and saithe investigations (16.4.—6.5.: south-east and south-west coasts of Iceland (saithe, cod, haddock); 5.9—19.10: east, south, and west coasts of Greenland (cod); 10.11.—8.12.: north-west and north coasts of Norway, Finnmark (saithe)). Samples of the fish caught at all trawl stations were examined for length, sex, maturity, stomach contents, weight, and otoliths were collected. The relation between abundance and hydrographical conditions was also studied.

On a cruise by the "Anton Dohrn" between 28. July and 25. August to the Fladen-Dogger Bank area, the fat-herring grounds in the south-eastern North Sea,

and the Ling Bank, material was collected for studies of the biology of haddock, whiting, dab, and saithe.

Work on Fish

The number of fish examined during the six cruises was as follows:—

	Length measurements	Age determinations
Cod	1,213	1,353
Haddock	4,644	3,456
Saithe	125	1,965
Whiting	8,497	4,884
Trade Ling	—	87
Torsk (*Brosme brosme*)	—	124

Haddock. Material for studies of age, length, sex, and maturity in haddock was collected on the North Sea cruises of the "Anton Dohrn". A study of population dynamics was started.

Whiting. Material on the biology of the whiting in the North Sea (chiefly in regard to age composition, growth, egg production, and maturity) was collected on all cruises in the North Sea. A report is being prepared which shows, amongst other things, that fairly considerable differences exist in the growth-rate of the stock in different parts of the North Sea.

Whiting caught along with fat herring by German cutters were measured during July to October. The assessment of size composition differed greatly from that obtained in 1954 and 1953, which indicates rather violent fluctuations in year-classes (strong year-classes, 1952 and 1955; weak year-classes, 1953 and 1954).

Coalfish. On the occasion of a visit by the "Anton Dohrn" to Bergen a discussion took place (16.11.) on Norwegian-German co-operation in coalfish investigations. The general purpose is to build up, from combined data, a comprehensive picture of the dynamics of the coalfish population in Norwegian waters and adjacent areas, and to study the effect on it of the varying fishing activities. As regards biology, Norway will concentrate on the different stages of immature fish, Germany on the mature fish.

Market Measurements. Market sampling was continued. The following measurements were carried out:—

	Length measurements	Age determinations	Weight
Cod	18,724	12,309	7,269
Haddock	9,788	5,800	—
Saithe	904	34,891	—
Blue Ling	1,727	—	—

Iceland

(Jón Jónsson).

The work on cod and haddock was continued on the same lines as in previous years. Otoliths were collected for age analyses, growth measurements, etc. Cod and haddock were tagged with three kinds of tag at various localities round the coast, and trawling experiments were made at fixed stations for studies of fish density.

Cod. From commercial catches 8,530 otoliths were collected and 27,854 fish were measured. The material collected on board research vessels comprised 3,995 otoliths and 8,563 length measurements; 2,152 cod (both mature and immature fish) were marked on different occasions at various places round the coast. These marking experiments were undertaken in February, May, July, and December.

Haddock. The haddock material, which was all collected on board research vessels, amounts to 3,826 otoliths and 9,832 length measurements and came from localities all round the coast. In 15 marking experiments 1,972 haddock were marked at various localities round the coast, in the same months as the cod were marked.

Extensive investigations were carried out on the haddock in Faxa Bay (south coast) in connexion with the closure of the bay to trawling.

Ireland

(Arthur E. J. Went).

During the year Miss H. W. Elkin completed a report on "Whiting (*Gadus merlangus* L.) in Irish waters" which was published in December, 1955, in the Scientific Proceedings of the Royal Dublin Society (27, (N.S.), 2).

Norway

(G. Rollefsen).

Work at Sea

In connexion with cod investigations the research vessel "G. O. Sars" made four cruises in the Barents Sea area, in February-March, May, July-August, and October-November. The work consisted mainly of echo-surveys, hydrography, fish marking, and collecting samples of fish.

As in previous years a cruise was made with the R/V "Johan Hjort" to northern Norway for the purpose of studying the youngest groups of cod, haddock, and coalfish.

Work on Fish

Cod. The collection of samples from the cod fisheries at various seasons was continued. In Lofoten 28,186 cod were measured and otoliths obtained from 11,316 fish. During the spring cod fishery in Finnmark 27,303 fish were measured and otoliths taken from 6,811 fish. Research-vessel sampling in the Barents Sea provided 3,190 otoliths.

During the Lofoten season 1,400 skrei were tagged. A total of 3,800 young cod were released from the "G. O. Sars" at different localities in the Barents Sea.

Haddock. Market and research-vessel sampling of the arctic haddock was continued; about 3,000 fish were dealt with.

A total of 471 marked haddock were released at different localities in northern Norway.

Saithe. Samples were collected from the spawning stock in winter between Stad and Lofoten; otoliths were collected from about 1,000 fish. In the summer

and autumn, about 1,300 otoliths were collected in the Grip, Vesterålen, and Finnmark regions.

In May 490 marked saithe were released at Grip and in July-August another 1,725 fish were liberated in Finnmark.

Poland

(Z. Mulicki).

Cod. According to Mr. Rutcowicz investigations on the state of the cod stock in the southern Baltic were carried out in the Gdansk and Bornholm regions.

The state of the cod stock in the Gdansk region was kept under continuous observation. Biological analyses of samples from the catches were carried out on 37 samples comprising 3,817 fish.

In addition, market measurements were made twice a month, 15,398 fish being dealt with. The fish measured were landed from cutters which had been fishing on the most intensively exploited fishing grounds. The investigations in the Bornholm region on the state of the western stock were based on biological analyses carried out on 27 samples (2,733 fish) taken from commercial catches, and on the length measurements of 13,365 fish landed from the western fishing grounds.

In continuation of the investigations on the migration of the cod, 784 cod from the western part of the southern Baltic were tagged. Systematic observations were made of the numbers of cod eggs and larvae occurring in the southern Baltic.

The age of the fish in the Gdansk and Bornholm Basins was estimated from the otoliths. In the course of investigations on the food of the cod, 1,200 alimentary tracts were examined.

During the macroplankton investigations information was obtained on the distribution and occurrence of the eggs and larvae of the cod.

Scotland

(R. Jones).

Work at Sea

The research ships "Explorer" and "Scotia" were in full commission throughout the year, "Explorer" being largely confined to the North Sea and "Scotia" to Faroese and far northern grounds. A limited amount of trawling was done by "Scotia" in the North Sea, to the west of Scotland, and at Faroe but more intensive fish sampling resulted from "Explorer's" cruises. In particular four cruises in March, June-July, July-August, and September-October, were concerned with an extensive trawling programme designed to sample the haddock and whiting stocks in the northern, north central, central, and eastern part of the North Sea as far south as the latitude of Aberdeen. These cruises link up and are comparable with the three special cruises in 1954. During February, April, and December, "Explorer" was engaged in experimental trawling in the Buchan Deeps. In this work, the effect of haul duration on the numbers and size composition of haddock was investigated. Also, during the April cruise, comparison was made of the selective actions of an English untarred manila and of a Scottish tarred manila cod-end.

Work on Fish

Cod. Little work is being done on cod, apart from a survey of its feeding habits in Scottish waters, and its variations in availability in time and space.

Haddock. Three cruises made within the North Sea and one to the west of Orkney for assessment of new haddock brood revealed an abundance three or four times that of the previous year. Experiments with the Corbin net were not satisfactory. On the other hand, the Icelandic pelagic trawl with small-mesh cover proved very effective for the capture of small fish, more especially the larger pelagic stages.

Continuous sampling of North Sea haddock was maintained from commercial catches landed at Aberdeen fish market and from trawl catches made by "Explorer".

Haddock data collected by research ship in the North Sea and from the fish market in respect of Faroe grounds will be made available in in *Annales Biologiques*, **12**. The relationship between mortality and fishing effort in Faroe haddock has been analysed further. The end of 1955 marked the completion of the sixth year of this study. Population studies of the North Sea haddock stocks have been continued, bearing in mind the possibility that density dependent factors might play an important part during periods of lower than average fishing effort. A report on the growth of haddock at Faroe and in the North Sea during post-war years has been brought up to date and incorporated with an account of the effect of mesh selection on the mean size of haddock. A theoretical paper dealing with the movements of the haddock is in preparation.

Whiting. Preliminary population studies of the North Sea whiting are being continued, and a paper on the biology and elementary bionomics of the whiting has been published.

Preliminary assessments have been made of changes in abundance of whiting, as judged by commercial catches, in several parts of the North Sea since the war.

Sweden

Cod (G. Otterlind). During cruises with the "Skagerak" in the period February-April 1955, samples of cod were collected from different areas of the southern Baltic for length, age, and maturity analyses. On a cruise with the "Eystrasalt" in August investigations were made in the Åland Sea, where a fairly intense line fishery for cod has been carried on during the last 20 years or so. A few samples were taken for race studies. Spawning was taking place at a depth of 200—250 m.; hauls with plankton nets yielded no eggs or fry, however. 205 fish were tagged with ebonite disks marked with the letters SvÖ and a number; 14 fish were marked with the Lea tag. These investi-

gations are to be continued on a larger scale in 1956. Up to 1. April 1956 11 recoveries had been reported, one of them from the southernmost Baltic.

Whiting (I. Sörensen). The stock of whiting in the Skagerak and northern Kattegat was studied. Investigations were carried out on board the "Skagerak" and the "Eystrasalt" in January-February, May-June, July-August, October, and December. Some 32,000 fish were measured and the ages of about 2,600 determined.

Publication

Ellis, R. W., & Jones, R.: "The whiting (*Gadus merlangus* L.) in the North Sea." Mar. Res. Scot., 2, 25 pp., 1956.

Herring Committee

1955

By F. Devold

Belgium

(Ch. Gilis).

The study of the herring concentrations exploited by the Belgian trawlers was continued:—

1) The full-herring concentrations of the northern and central areas of the North Sea, from August to December (1,245 herrings).
2) The full-herring of the "Smalls" from August to October (665 herrings).
3) The spent-herring concentrations of the southernmost area of the North Sea in January and February, end of the season 1954-55 (750 herrings), and in December, beginning of the season 1955-56 (120 herrings).

These observations cover all biological values, e.g., length, weight, sex, stages of maturity, mesenteric fat, age, vertebrae, keeled scales (K_2), stomach contents, and a biological scale. A complete and detailed study of the activity of the trawlers, the fishery, and the landings is also made for each of these three groups.

Denmark

(Å. Vedel Tåning).

The herring and sprat investigations have been continued on the same lines as during recent years. Reports on the results are given in Ann. Biol., **12**.

Inner Danish Waters

(Skagerak, Kattegat, Limfjord, Belt Sea, Baltic).

Quantitative fishing for herring fry was carried out in April, May, June, and October in the Kattegat; in May, June, and October-November in the Belt Sea.

Eighteen samples of adult herring from the northern Kattegat and Skagerak have been studied as to racial characters. Stock analyses of several samples from the whole area were carried out.

Sampling of herring stomach contents was made in the Bornholm area as in previous years.

Racial and stock analyses of the sprat were carried out in the Skagerak, Kattegat, and the Belt Sea. Post-larval stages were fished in the Kattegat in June.

About 100 samples of herring and sprat used in the fishmeal industry were analysed.

North Sea

Herring investigations were carried out in the Bløden Ground area with the "Dana" in April, May, and September, and with the experimental cutter "Jens Væver" in the first half of July-August, and the second half of October—first half of November.

Many samples of herring from landings at Esbjerg were analysed during the seasons and market measurements of herring were also obtained throughout the seasons (spring season from mid-January to about 1. May; autumn season from mid-July to November).

A paper on the food of the herring in the Bløden Ground area has been published.

During the "Dana's" cruise in September the spawning herring of the north and west Dogger Bank was studied. 336 fish were tagged.

The occurrence of post-larval **sprat** in the eastern North Sea was especially studied during the "Dana's" cruises.

Faroe-Iceland Waters

Herring investigations were carried out in the area N.N.E. of the Faroes to East Iceland (to 67° N. Lat.) from 5. to 30. June with the "Dana". The general programme agreed upon by Iceland, Norway, and Denmark was carried out as usual. Hydrographical observations were made in all the sections in which herring concentrations were studied by means of the R12 Bendix echo-sounder. Plankton samples were

obtained by means of the Hensen net, plankton indicator, and stramin net. The "scattering layer" was studied with the Hughes echo-sounder. The routes are shown on charts in Ann. Biol., **12**.

Greenland Waters (P. M. Hansen).

Fishing experiments with drift-nets and seines were carried out with the M/C "Immanuel" in the Julianehåb district. Scale and otolith samples, together with measurements, were obtained. No marking experiments were carried out this year.

England

(D. H. Cushing).

Work Ashore

At North Shields, Whitby, and Lowestoft, market samples were taken for age, length, and maturity in the following numbers:—

North Shields	2,700
Whitby	1,528
Lowestoft	7,655

During the autumn season (1955) at Lowestoft a full analysis of the methods of herring market sampling was undertaken.

Work at Sea

The Gulf model III high speed tow-net has now been fully adapted for use on herring larval surveys.

A series of cruises was undertaken in September and October by "Sir Lancelot" in the Dogger and Whitby region in order to determine regional differences in herring races at that time.

A number of echo-surveys by "Platessa" from the Indefatigable Bank to the Straits of Dover was carried out in November during the East Anglian herring season.

An experiment with "Sir Lancelot" and "Platessa" was made in the Sandettié region to find the relation between the degree of movement of echo-traces and the tidal streams.

A commercial pair-trawling experiment was carried out in November and December, when observations were made on the behaviour of herring in relation to the trawl.

Tagged herrings were liberated off North Shields, Whitby, and off East Anglia.

France

(Institut des Pêches).

Les populations de harengs du sud de la Mer du Nord et de la Manche Oriental ont été étudiées, comme chaque année, au point de vue de la biométrie et de la composition du stock. Les observations ont porté sur environ 1,400 individus (âge, taille, maturité sexuelle, moyenne vertébrale).

Germany

(A. Bückmann).

The research vessel "Anton Dohrn" made a cruise for herring investigations in the northern North Sea from 28. July to 25. August. The area investigated was between 54°40′ and 59°40′ N., and between 8° E. and 1°W. south of 58° N. and between 2° E. and 1°30′W. to the north of this position. Herring populations were studied, together with the hydrographical conditions of the area, and observations were made on the behaviour of the herring in different water bodies.

Tentative herring taggings were undertaken, but they were discontinued owing to the poor condition of the herrings caught by trawl in the open North Sea. The herring tagging programme was later on resumed on board commercial luggers in the Dogger Bank area with reasonably good results.

During 1955 the investigations of the herring populations in different areas of the North Sea were continued on the same lines as previously. Forty-eight samples containing 4,541 herrings from commercial catches made by trawlers, drifters, and by the R/V "Anton Dohrn" during March and August were analysed, as well as 18 additional samples containing 1,750 herrings from the fish markets. Measurements were made of 21,669 herrings. Samples were obtained from the following areas:— Viking Bank to Ling Bank, Bressay, Fladen, Gut, off the east coasts of Scotland and England, Dogger Bank, Southern Bight, Channel, North Hinder, Sandettié, Clay Deep, Helgoland, and the Elbe estuary. In addition, German fishery protection vessels carried out echo-soundings and hydrographical observations in these areas. In the investigations on herring races, special attention was paid to l_1 values.

From the catches of fat herring, a fishery which increased 25 % in 1955 compared with 1954, 47 samples weighing 1600 kg. were analysed for race and size composition.

Fish other than herring formed 15 % by weight of the catches, of which 7 % were whiting, 1·2 % haddock, 0·4 % dab, 1·3 % various (e. g., cod, gurnard). Of the total catch, 1·3 % by weight consisted of undersized fish belonging to species protected by the International Fisheries Convention (whiting, 0·9 %; haddock, 0·1 %; dab, 0·3 %). The percentage weight of undersized fish was in July 2·0 %, in August 0·5 %, in September 0·6 %, and in October 2·3 %.

Iceland

North Coast Herring (Á. Friðriksson).

As shown in the administrative report of Iceland to the Distant Northern Seas Committee, intensive work at sea was carried out in 1955, mainly for the purpose of herring fishing.

The laboratory in Siglufjord was run as usual in July and August. Here, 3,196 herrings were examined

for length, sex, weight, maturity, and number of vertebrae. Scales were collected for later investigation of age, type, etc., and otoliths were also taken. The weight of the gonads was recorded and the maturity factor calculated. In addition, 166 herring which had been caught off the north-west coast in August, and 227 fish from the east coast, caught in August, were also examined in the same way.

A large number of herring were measured only, especially in connexion with the tagging experiments, and 917 herrings taken on board the "Ægir" by the experimental fishery, were measured and examined in other ways. Altogether 13,709 herrings were measured. Finally, some stomachs were examined for food content.

The tagging plan was continued as in previous years, and the same boat was chartered as in 1954 ("Auðbjörg"). During July, 9,241 herrings were tagged off the north coast and, in addition, 2,491 fish were tagged in an east-coast fjord, and 331 off the south-west coast. The total number tagged in 1955 therefore amounted to 12,068 fish. Only 35 tags of Icelandic origin were returned from the oil and meal plants during the season. No Norwegian tags were recorded.

South Coast Herring (H. Einarsson).

The routine investigations on length, sex, weight, and meristic characters were continued using the methods employed during recent years. Assessments for age and analyses for race were carried out on 3,647 herrings by means of the otolith method. At the landing ports, 10,047 herrings were measured. Tagging was carried out on a limited scale and no returns have been recorded.

Work at Sea

Extensive investigations on the distribution of herrings were carried out from 27. May to 21. September. The first cruise, from 27. May to 27. June, was planned as a part of the inter-Scandinavian herring programme. The areas investigated during this cruise were situated mainly between W. Iceland and East Greenland and between N. Iceland and Jan Mayen.

On later cruises the research ship assisted the fishing fleet, with notable success, in locating the herring concentrations.

Fishing experiments were carried out and samples from the catches were examined.

Netherlands

(J. J. Zijlstra).

In June and July three cruises were made with the "Antoni van Leeuwenhoek" in order to continue work on the vertical migrations of herring shoals with the aid of echo-sounders.

Together with this work, observations were made on light intensity, temperature conditions, and salinity and plankton distribution. As far as possible the work was done in the vicinity of the lugger fleet in order to relate the observed herring migration with the actual catch made by the drift-nets.

In the period September-December a new sampling programme was started. Samples of spawning herring were taken from commercial trawlers.

The aims of the programme were:—

1) Racial investigations on herring of different spawning areas of the southern North Sea and the Channel.
2) To obtain a reliable age distribution from the spawning areas.
3) To see if length and age distribution changed on a spawning ground in the course of the spawning season.

In December a few short cruises were made to collect samples of I-group herring along the Dutch coast.

The work on the lugger statistics (herring charts) was continued along the same lines.

Norway

(Finn Devold).

General Work

During 1955 the general work of securing samples for studying fluctuations, length, weight, Vert. S., maturity, etc., was continued. In the winter season 31 samples, totalling 6,150 herrings, were investigated. From the tagging experiments on Winter Herring 297 herrings were also examined. During the summer cruise of the R/V "G. O. Sars" in the Norwegian Sea 4 samples, containing a total of 791 herrings, were collected. From the Fat Herring fisheries 3 samples, totalling 300 herrings, were investigated.

Cruises

In January the R/V "G. O. Sars" followed the immigrations of the herring towards the Norwegian coast. The positions of the herring shoals were transmitted to the fishermen three times a day, until the shoals had arrived in the Norwegian coastal area.

Early in February we also followed the shoals approaching the Haugesund district (Spring Herring district).

In March, Dr. Wiborg carried out plankton investigations off the Norwegian coast, and herring larvae were found to be abundant off Ona at Möre (more than 2,000 larvae per square metre of sea surface). Herring larvae were also numerous on the Fröya and Halten banks. Further northwards only few larvae were found.

The summer cruises in the Norwegian Sea in collaboration with Denmark and Iceland were carried out from 6. June till 12. July, and from 16. August to 23. September with the object of reporting to the fishermen the concentrations of herring.

From 21. November to 19. December the "G. O.

Sars" was working in the area between Norway and Iceland in order to investigate the spawning migration of the herring. During this cruise the conditions in the Skagerak were also investigated.

Tagging Experiments (Olav Dragesund).

In all, 36,531 herrings were tagged on the Norwegian coast in 1955. Of these 11,245 were Large Herring, 10,287 Spring Herring, 6,599 "forfangstsild" (recruit spawners mixed with fat herring) and 8,400 Fat Herring. 2,813 herrings were doubly tagged (internal steel tag and Lea hydrostatic tag), 1,000 with Lea tags only, and 32,718 with the internal steel tag.

In 1955 tags were recovered from 1,826 fish. Of these 1,550 were internal tags, 76 external tags, and 200 double tags.

Poland

(W. Cieglewicz).

Southern Baltic

Investigations on herring are being carried out in three coastal regions of Poland, viz., Pomerania Bay, the Bornholm Basin, and Gdansk Deep. From Pomerania Bay 700 herrings of the spring-spawning type were examined. In the feeding region of the Bornholm Basin 19 samples, containing 1,900 herrings, were analysed and 10,324 fish were measured. In Gdansk Deep 14 samples, totalling 1,400 herrings, were examined, and, in addition, 5,204 fish were measured. The material was obtained both from the spawning and feeding grounds. In all, 40 detailed analyses were carried out on 4,000 herrings, while 15,525 fish were measured.

In order to examine the food of the herring, 500 alimentary tracts were analysed.

North Sea

Work on the stock of herring in the North Sea was commenced in 1955. In all, 4,571 herrings mainly from the fishing grounds of Utsire and the Patch were measured. Detailed analyses as to age, sex, and maturity were made on 700 herrings.

Observations by means of an echo-sounder were carried out in the region of the Skagerak. These observations concerned the diurnal vertical migration of the herring as well as the reaction of the herring shoals to the catching gear during trawling operations.

Scotland

(H. Wood).

The Scottish herring research was based on a programme of daily sampling of commercial catches during the course of the various fisheries. The North Sea shoals were sampled from landings at Lerwick, Fraserburgh, Peterhead, and Aberdeen. On the West of Scotland sampling was maintained throughout the year at Stornoway and periodically at Ullapool, Mallaig, Oban, and the Clyde ports. The data collected were designed mainly for biometric and race studies.

Surveys of the northern North Sea from March to September by the research vessels "Clupea", "Explorer", and "Scotia" were directed towards studies of the ecology of the herring stocks, in which the Oceanographical Laboratory of the Scottish Marine Biological Association collaborated; special attention was given to the hydrological and plankton characteristics of the environment.

Echo-sounding surveys were made for the purpose of defining the distribution and abundance of herring beyond the range of the Scottish fishing fleets.

Herring tagging experiments, in which Scottish and Lea tags were used with toggle and bridle attachments, were carried out as follows:—

(a) In the Upper Moray Firth in February and March when 1,327 adolescents were tagged and liberated.
(b) Off the Scottish north-east coast in June and July when the herring tagged numbered 3,874.

Television equipment was used in September 1955 with the object of locating spawning beds, unfortunately without success.

Surveys were made for the location of spawning grounds and for determination of the drift of the larvae.

Aquarium experiments to effect crosses between spring and autumn spawning herring were successfully made as in the previous year.

Trawling experiments for the capture of herring by means of the Larsson and Icelandic trawls were made in the eastern North Sea in March 1955, and off the Scottish north-east coast during the summer when a small type of Swedish herring trawl was used. In both cases catches were disappointing.

Light aggregating experiments were continued.

Sweden

Skagerak, Kattegat, and North Sea (H. Höglund).

During 1955, the examination of herring samples was continued whenever possible. Some 30 samples were taken from the commercial fishery and 10 from catches made by the R/V "Skagerak". Altogether about 4,000 fish were analysed as to length, weight, sex, stages of maturity, mesenteric fat, stomach contents, vertebrae, and age. On a few occasions the gill rakers of the first gill were counted.

The special investigation on the spring-spawning coastal herring was continued.

In April, 1,000 herrings, mainly spring spawners, were tagged with the Lea tag and released in the northern part of the Bohuslän archipelago, and in September some 600 fish were tagged in the Dogger Bank area.

Baltic (G. Otterlind).

During 1955, the tagging (Lea tag) of Baltic herring off the Swedish east coast comprised 2,860 fish. 143 were tagged in the Luleå area in September, 548 in the Umeå area in July, 999 in the Sundsvall area in July, 318 north of Hudiksvall in September-October, 512 in the archipelago north-east of Stockholm in May, 40 off the bay of Valdemarsvik in April, and 300 in the archipelago off Västervik in June-July. Up to 1. April 1956 the recoveries amounted to 128. The percentage of recovery from the different experiments ranging from 0·7 to 9·4, these results are being mainly in accordance with the fishing activity in the areas in question.

About 40 samples comprising about 3,500 herrings have been examined, most of them from the Gulf of Bothnia.

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Comité de la Sardine

1955

Par J. Cuesta

Angleterre

(D. H. Cushing).

Sardine. An echo-survey was made in the region of the Wolf Rock in April and some fish were caught in the Larsson trawl.

An echo-survey was made in Mount's bay and east of the Lizard in November; fish were found off Mevagissey.

Belgique

(E. Leloup).

Sardine. Biological observations were made on the sardine caught occasionally with the herring during November and December in the southern area of the North Sea. These observations covered all biological values: length, weigth, sex, stages of maturity, mesenteric fat, age, vertebrae, keeled scales (K_2), and stomach contents.

Espagne

(J. Cuesta).

Sardine et Anchois. Les observations biologiques régulières (taille, poids, moyenne vertébrale, maturité sexuelle, écailles) ont été poursuivies sur la sardine et l'anchois de la région Cantabrique ainsi que sur la présence des œufs des deux espèces dans le plancton de la côte de Santander.

Une étude sur la présence de *Scolex polymorphus* Rud., sur la sardine et dans l'anchois, a été initiée en vue d'obtenir des renseignements écologiques sur les deux Clupéides.

France

(Institut des Pêches).

Sardine. Des observations sur le stock de sardine ont été effectuées régulièrement d'avril à novembre à St.-Jean-de-Luz et de mai à septembre à La Rochelle sur 1400 individus (taille observée, taille l_1 et moyenne vertébrale). Le bateau pilote de pêche "Donibane" a parcouru toute l'année les lieux de pêche entre St.-Jean-de-Luz et la Vendée et fait un travail régulier de détection.

Norvège

(G. Dannevig).

Sprat. The investigations of the abundance and distribution of eggs and larvae have been continued in order to locate the spawning grounds of the sprat.

The age and growth of the fish has been studied on the basis of samples obtained from the commercial catches.

The number of vertebrae has been analysed in an attempt to identify different populations in Norwegian waters.

Pologne

Sprat. 10,483 sprat, contained in 38 samples, were measured; they had been caught in the Gdansk region. The age of 1,138 individuals, contained in 25 samples,

was determined by means of the otoliths. In the Bornholm region 5,449 sprat were measured, they came from 11 samples. The age of 551 fish was determined. Altogether 15,932 sprat were measured and the age of 1,689 specimens was read.

Furthermore the distribution and quantitative appearance of sprat eggs and larvae were traced.

Portugal

(A. M. Ramalho).

Sardine. Continuation des observations régulières selon le programme des années précédentes (taille, poids, écailles, vertèbres, maturité sexuelle) à Leixões, Lisbonne, Portimão et autres ports de pêche, plus particulièrement en vue de connaître la composition par classes d'âge et la croissance du poisson débarqué; essai de prévision des résultats de la pêche à court délai.

Examen morphologique et histologique des gonades, depuis leur différentiation, pour l'étude du procès de maturation et du cycle sexuel (stades de pré-maturation, de ponte et de post-ponte) en vue d'une révision de l'échelle de maturité sexuelle adoptée par la Réunion de la Sardine à Biarritz (1948).

Comité des Poissons Scombriformes

1955

Par A. M. Ramalho

Angleterre

(A. C. Simpson).

Nothing to report of work on the scombriform fishes from laboratories in England and Wales.

Belgique

(E. Leloup).

Biological observations have been commenced on mackerel landed at the Belgian fish market. Determination of length, weight, sex, stages of maturity, mesenteric fat, and age.

Écosse

(B. B. Parrish).

No investigations on the scombriform fishes have been undertaken.

Espagne

(J. M. Navaz).

Dans le laboratoire de l'Institut Espanol d'Océanographie de Vigo ont été faites des expériences sur la manière la plus convenable de saigner à bord les bonites capturés (albacores), question polémique qu'a été posée à Vigo au cours de la campagne bonitière antérieure et que notre conseil a contribué à résoudre.

Dans le Laboratoire Océanographique de San Sebastián on a poursuivi l'étude biométrique des differentes espèces de thonidés qu'on a capturé sur la côte basque pendant la période qui va de la fin de mai jusqu'au milieu de novembre. On a fait également des observations sur les modalités de la pêche de cette région.

France

(J. Furnestin).

En juin 1955 le navire "Président-Théodore-Tissier" a détecté les premières apparitions de germons en surface et signalé l'emplacement de ces lieux de pêche aux thoniers français. Les thons blancs capturés ont été examinés et des observations physiologiques ont été faites sur les organes prélevés (hypophyses, thyroïdes et foies). Au total 86 poissons ont été mesurés.

A Saint-Jean-de-Luz 58 *Sarda sarda* et 134 *Thunnus thynnus* ont été mesurés.

Irlande

(Arthur E. J. Went).

No work was done on species covered by this Committee during 1955 but it would seem appropriate to report that a specimen of the Plain Bonito (*Auxis rochei* Risso), the first to be recorded from Irish waters, was captured off Ballycotton, Co. Cork, on the 23. September 1955. This specimen was recorded by A. E. J. Went in a short paper "The Plain Bonito, *Auxis rochei* Risso, and other members of the mackerel family in Irish waters", Irish Naturalist's Journal, Vol. XI.

Norvège

(Arne Revheim).

Mackerel. The Norwegian investigations on mackerel have been continued during the season 1955 as follows:—

1) Studies on age and growth have been carried out on the basis of samples from the commercial catches. The samples include all sizes of mackerel.
2) Tagging experiments have been carried out in some fjords and in outer skerries in western Norway as well as in offshore waters, in the Skagerak off Arendal.

The total number of mackerel tagged in 1955 was 2409, of these 1368 specimens were tagged in the Skagerak.

The investigations on mackerel will be continued during the winter.

Tunny (*Thunnus thynnus*). During the summer of 1955 investigations have been started on the tunny which occurs in Norwegian waters in June-August-September.

Biological dates of the fish are obtained from the commercial catches.

The dates comprise: Length, weight, and sex of the fish.

The 1st vertebra has been cut off for age determination.

The total number of tunny examined was 700.

Portugal (Outremer)

(F. Frade).

Thonidés. La "Mission scientifique de S. Tomé" a continué ses observations concernant les Thonidés dans les eaux de S. Tomé et Principe, notamment *Neothunnus albacora* et *Euthynnus alleteratus*, ces deux espèces étant capturées à la ligne, en profondeur par les pêcheurs natifs pendant toute l'année, mais en plus grande quantité depuis octobre à février. En plus on a constaté vers la fin d'octobre l'apparition de nombreux bancs d'*E. alleteratus* dans les eaux de surface (température variant de 24·2 à 24·9°C.; salinité de 33·33 $^0/_{00}$; les poissons, ayant été entourés par les bateaux des pêcheurs, sont ensuite capturés dans les mailles de filets verticaux.

Des mensurations et pesages (poids total et poids des gonades) ont été faites; les poissons de cette dernière espèce étant, pour la plupart, au mois considéré, en maturité sexuelle, reconnus par les valeurs du rapport gonosomatique, ainsi que par l'observation microscopique des gonades.

Suède

(S. I. K. Sörensen).

Mackerel. In 1955 an investigation on the biology of the mackerel has been commenced. Material for age determination was secured during the cruises of the "Skagerak" in the Skagerak and the North Sea (Dogger Bank and West Bank).

Salmon and Trout Committee

1955

By Arthur E. J. Went

Denmark

(Knud Larsen).

(a) Tagging and marking experiments were carried on in 9 localities. Eighteen stripped salmon and 390 sea trout, viz. 163 stripped fish, 143 spawning fish, 83 finnock, and 1 smolt, were tagged by means of celluloid tags. Seventy brown trout were tagged in the same way before being liberated into brackish water of the Randers fjord.

(b) Analyses of the stock of young sea trout and stationary trout by means of D.C. electro-fishing were made in the upper course of the river Bronså (west Jutland).

(c) The sea trout run in the river Bronså was studied in the fish pass at the "Danish Trout Pond Farmer's Experimental Station" and by means of D.C. electro-fishing in 4 other streams.

(d) The age, growth, and migration of finnock was studied in the Hjarbæk fjord (north Jutland).

(e) Salmon investigations were carried on in the Baltic. Length measurements of commercial catches were carried out in March and April. A material of scale samples has been collected.

West Greenland (Paul M. Hansen).

Salmon and Char. The investigations of salmon and char have especially been concentrated on Godthåb and Sukkertoppen districts. Electro-fishing has been carried out in different rivers for stock analyses and for collecting material. Samples of 279 sets of salmon

scales and 1,062 otoliths of char have been collected for age analyses and growth investigations.

Stomach contents have been collected from small salmon and char for investigation of the food competition between the two species.

Thirty small salmon and 573 char have been tagged with plastic tags.

Finland

No report received.

France

(R. Vibert).

Recherches physiologiques et biologiques

Les recherches entreprises sont poursuivies.

Il se confirme que les alevins de truites et saumons provenant d'incubation sous gravier font preuve d'une bien moins grande vulnérabilité que ceux produits en incubateur classique de pisciculture, et au courant, et aux fortes et basses températures et aux prédateurs.

Les travaux de marquage de smolts commencés en 1951 ont été poursuivies.

Jusqu'à présent et au total:— quinze saumons adultes ont été repris dans leur rivière d'origine. Huit smolts marqués ont été repris au large de la Bretagne 23 à 28 jours après le marquage sur le Gave d'Oloron. Des comptes-rendus ont été reçus en 1955 concernant la capture au nord-ouest de la Bretagne, en pleine mer, de 22 saumons ou truites de mer non marqués, dont le poids allait de 500 grammes à 5 kg. La zone de capture de ces poissons se trouve pour le moment dans le prolongement de la direction définie par l'estuaire de l'Adour et la zone de recapture des smolts marqués sur le Gave d'Oloron, tributaire de l'Adour.

Propagation artificielle du Saumon

La récolte en décembre 1955 a été à peu près nulle du fait des niveaux d'eau constamment défavorables.

Prises de Saumons

Campagne médiocre en 1955 sur l'Adour.

Germany

(R. Kändler).

In the spring of 1955, 458,000 fry of sea trout were liberated, mostly in some small rivers flowing into the Schlei, and smaller quantities in brooks opening into the western Baltic and into the Kiel Canal.

The collection of statistical data on the driftline salmon fishery in the south-eastern part of the Baltic was continued. A publication on this subject is in preparation.

Iceland

(Th. Gudjónsson).

Marking of salmon and sea trout smolts was carried out in the River Úlfarsá as in previous years. Salmon smolts (117) and sea trout smolts (46) were marked by cutting off the adipose fin and the right ventral fin. Recaptures of salmon marked as smolts in 1952 amount to 3.5 %, and the respective figure for salmon marked as smolts in 1953 is 1.5 %. The percentage of recaptures for salmon marked as smolts in 1954 is so far 7·1 %.

Tagging of kelts took place at two centres. 57 kelts from the River Elliðaár and 18 kelts from the River Fitjá on the north coast were tagged. Recaptures of kelts tagged at the River Elliðaár in 1954 so far amount to 21·3 %. From 13 kelts tagged in the River Bugða in Kjós in 1954 two (15·4 %) have been recaptured. Hydrostatic tags were used.

Collecting of salmon and trout scales for age analysis and growth studies was continued, and so was the population study of trout and char in Lake Meðalfellsvatn. A survey of spawning grounds in the River Úlfarsá was made.

Hatchery operations were carried out at three centres mainly with salmon and rainbow trout ova. Fry and fingerlings were liberated into several rivers.

The run of salmon was great during the year of 1955, but grilse predominated in the catch.

Ireland

(Arthur E. J. Went).

During 1955 material was again obtained from the River Shannon along the usual lines but owing to the urgency of other work it was not found possible to examine this and other material from the years 1952 to 1954. Tagging of clean salmon in the sea was carried out in June from commercial drift vessels from the ports of Bunbeg and Dowings, Co. Donegal. Altogether 194 fish were tagged and 18 recaptures were made in the Rivers Bann (2), Foyle (1), Owenea (1), Erne (3), Ballisodare (2), and Moy (5) or their tributaries and in Donegal Bay (2) and off the Donegal coast near Aranmore. A single recapture of a fish tagged in 1954 in the same area was also made in Donegal Bay. Clean fish were also tagged in the estuary of the Rivers Erne, Feale, Ilen, and Shannon with a view to observing the behaviour of salmon moving up the estuary.

Tagging of smolts was again carried on at Clondulane on the River Blackwater and on the River Shannon near Limerick, this time using the small plastic tag used extensively by our British colleagues for tagging smolts. Kelts were again tagged at the hatcheries at Ballisodare, Banteer, Glenties, Lismore, and Treanlaur. A total of 715 salmon and grilse kelts and 267 sea trout kelts were tagged at these centres and 47 recaptures, mostly of fish from the previous year's tagging were made.

Officers of the Fisheries Branch of the Department of Agriculture again collaborated with officers of the Ministry of Commerce, Belfast, in preparing a report giving the results of tagging experiments conducted at Portballintrae which has how been accepted for publication. The same officers again collaborated in research into the salmon and sea trout of the River Foyle and their reports will appear as appendices to the Foyle Fisheries Commission Report.

Material consisting of scales and relevant data for the salmon of the Rivers Erne, Lea, and Moy was examined during the year. Further material for the River Moy was collected. The detailed returns from the salmon drift-net fishery on the north-west coast of Ireland from 1925 to 1954, inclusive, were investigated and a report was prepared thereon.

In connexion with the removal of coarse fish (mainly perch and pike) from trout waters investigated by Dr. Ann Healy a report on the pike (food, growth, etc.) was prepared for publication by that officer during the year. The report on the experimental enrichment of certain small lakes near the western seabord of Ireland was compiled during the year.

The total catch of salmon was approximately 570,000 kg. compared with approximately 900,000 kg. in 1954. The returns for sea trout were about 33,000 kg. in 1955 compared with 32,000 kg. for the previous year. Large spring fish which in 1954 appeared to have been very plentiful were unfortunately comparatively scarce in the beginning of 1955. Runs of other age-groups of salmon were also poorer than in the previous year and for the third year in succession the grilse did not run in force until about three weeks later than prior to 1952 so that the peak was in July.

During the season conditions for the artificial propagation of salmon and trout were favourable and the output of fry (in thousands) was salmon, 1,578, sea trout 33, and brown trout 2,182. Supplies of ova were also imported from Great Britain.

On the 1. June 1955, the Salmon Research Trust of Ireland Incorporated was established for the purpose of carrying out research in the life history of the salmon and sea trout in Irish waters, the project being financed jointly between Arthur Guiness, Son & Co., Ltd., the well known Dublin brewers, and the Minister for Agriculture for Ireland. Arrangements have now been made for the taking over for research purposes of a suitable river in the west of Ireland and the establishment of a small laboratory on the shore of one of the lakes on this river system.

Netherlands

(G. Lienesch).

No work on salmon and trout has been done in this country.

Norway

(L. Rosseland).

The research work the last two years has mainly consisted in tagging of clean salmon in the sea, and tagging of salmon and sea trout kelts and smolts in rivers. The following tagging stations have been operated: Kinn on the west coast of Norway, near Florø, Titran near the mouth of the Trondheim fjord, Bjørøyvær south of the Namsen fjord, and Kvaløyhamn north of the Namsen fjord. All the stations mentioned are coastal stations, and only bag nets have been used to catch the fish. Spent salmon and sea trout were tagged in the following rivers: Topdals River near Kristiansand, Lone River north of Bergen and Lærdals River in the inner part of the Sognefjord. Smolts were tagged in the Sandvik River near Oslo. The main results until now, from these experiments are as follows:—

In 1954, 114 salmon were tagged at Kinn and 69 fish, 60·5 %, were recaptured. One fish was recaptured in Sweden, 54 were recaptured in the sea in Norway, and 14 were recaptured in Norwegian rivers. In 1955, 79 salmon were tagged at Kinn, and 46 specimens, 58·2 %, were recaptured. One fish was recaptured in Sweden, one was recaptured in England, 39 were recaptured in the sea in Norway, and five in Norwegian rivers.

At Titran 90 salmon were tagged in 1954, and 57 specimens, 63·3 %, were recaptured. One fish was recaptured in Sweden, 45 were recaptured in the sea in Norway, and 11 were recaptured in Norwegian rivers. In 1955, 71 salmon were tagged at this station, and so far 33 fish, 46·5 %, have been recaptured, all of them in Norway. Five recaptures were from rivers and 28 from the sea.

At Bjørøyvær 124 salmon were tagged in 1954. 69 specimens, 55·7 %, were recaptured in 1954, all of them in Norway. 11 were recaptured in rivers, 58 in the sea. One specimen was recaptured as a kelt in May 1955. In 1955, 54 salmon only, were tagged at this station. So far 28 specimens, 51·9 %, have been recaptured, all of them in Norway. At Kvaløyhamn 118 salmon were tagged in 1954, and 76 fish, 64·4 %, have been recaptured, all of them in Norway. 15 recaptures are from rivers, 61 from the sea. In 1955, 178 salmon were tagged at Kvaløyhamn and so far 95 fish, 53·4 %, have been recaptured. One fish was recaptured in Sweden, 78 were recaught in the sea in Norway, and 16 in Norwegian rivers.

Late in the autumn 1954, 152 spent salmon were tagged in the Topdal River. Three of these were recaptured in 1955. In the Lone River 65 salmon kelts were tagged during April 1954, a short time before their seaward migration. So far 17 fish have been recaptured. Nine were recaptured in 1954, and eight were recaptured in 1955. Two recaptures were from the Lone River, the others were from the sea. In the Lærdal River 83 salmon kelts and 120 sea trout kelts were tagged in the middle of April 1954. Three of the salmon were recaptured in the Sogne-

fjord a short time after the tagging, and four have been recaptured in 1955. Of the 120 sea trout 40 have been recaptured. Twenty-nine recaptures were from the first season after tagging, 11 from the season 1955. In 1955, 38 salmon kelts were tagged, and so far three recaptures are recorded.

In the Sandvik River 520 salmon smolts were tagged in the last days of May and the first days of June 1955. One hundred and twenty were tagged with Lea tags and 400 with Carlin tags. To date eight of the Carlin tags have been returned and one of the Lea tags. Eight of the smolts were recaptured in the inner part of the Oslo fjord not far from the Sandvik River a short time after tagging. One smolt, however, had migrated a distance of 150 km. in ten days. This specimen was caught in a mackerel net on the Skagerak coast south of Sandefjord.

Poland

(W. Mańkowski).

Investigations on salmon and trout were carried out at sea and in the rivers. Scales were taken from 1,200 individuals of salmon and trout which were measured out at sea. Four hundred smolts of both species were tagged. The material, which had been collected in former years, was investigated.

The investigations at sea were carried out by the Sea Fisheries Institute in Gdynia. The Institute of Inland Water Fisheries in Olsztyn conducted the work in the rivers. The scope of this work is the biology of the salmon and trout.

Scales and measurements of trout from the Lower Vistula and the spawning grounds on the Raba and Dunajec Rivers were taken, in order to determine the age composition of the spawners. The scales of 200 salmon, which were measured, were also collected.

Investigations were carried out as to the degree of erosion of scales and appearance of spawning rings in the adult trout in the basin of the Vistula and the Slupia River. The age, growth-rate, spawning and appearance of the trout in the Wdydze Lake were investigated.

From the eggs obtained in 1954 about 1,500,000 fingerlings were produced in 1955. They were released into the various rivers all over Poland. Altogether about 4,000,000 fry were so released. In the autumn of 1955, 15,600,000 salmon and trout eggs were obtained for hatching.

In 1955, a plan for artificial propagation in 1956 was drawn by experts. The principles of a long-term plan for cultivating salmon rivers are being evolved.

Spain

(J. Cuesta).

During the year 1955, 4,727 salmon were captured in the rivers of the north of Spain as follows:—

Rivers	Number caught	Mean weight, kg.
Ason	702	5·181
Pas	39	5·10
Nansa	88	5·47
Deva-Cares	1,437	5·14
Sella	1,068	—
Navia	725	—
Narcea	623	—
Bidasoa	45	—

These figures represent 61·5 % of the corresponding figures for 1954.

Hatching experiments were successfully carried out with "Vibert" boxes in some rivers, or part of rivers to which spawners have no access. The details were as follows:—

River	Eggs	Mortality percentage
Miera	20,000	1·01
Pas	40,000	1·50
Pisuena	30,000	1·44
Deva	40,000	2·63

Sweden

(B. Carlin).

Work was continued along lines of previous years, and most of the investigations have been carried out by the Migratory Fish Committee, in cooperation with the Board of Fishery and Fisheries Research, and with the Bergeforsen Hydroelectrical Company. Twenty-five reports have been laid before the Migratory Fish Committee.

The work has mainly been concentrated on improving the technique of smolt rearing, including work on diet and on fish disease. In the rearing experiments the offspring of the different couples of parents have been separated from the fertilization of the ova to the releasing of the tagged smolts. Selected artificially reared salmon parr have to a great extent been used for the fertilization, and the offspring of these juvenile males has been in no way inferior to that of adult males. In the northern part of the country most of the salmon need rearing for three years before reaching the smolt stage. Attempts to increase the proportion of salmon reaching the smolt stage after only two years' rearing by hatching and feeding the fry for some time in heated water have been very promising.

Studies on the influence of predators on survival rate have been made in rearing-ponds as well as in rivers.

Special work on the physiology of the smolt metamorphosis has been made in cooperation with the Zoophysiological Institute of the University of Uppsala.

The tagging programme has been carried out in a large scale. The main purpose has been to check and compare different methods of rearing and planting smolts. The total number of smolts tagged since 1950 is 153,438, and 2,236 of them have been recaptured as adults. During 1955, about 50,000 salmon smolts

have been tagged, and about 850 smolts tagged in previous years have been recaptured as adults. In addition, 1,567 adult salmon and 1,249 sea trout have been tagged in 1955.

United Kingdom

I. England and Wales (F. T. K. Pentelow).

Salmon Migration (W. G. Hartley). The tagging experiment carried out off the mouth of the River Coquet in 1954 revealed that the salmon caught locally originated in the Coquet, and were not, as had appeared likely, Tweed fish moving along the coast.

It therefore became desirable to learn something about the movements of salmon on the intervening coast. The Tweed is by far the larger river, and has been mainly associated with migrations off the Scottish coast, whilst the Coquet fish appear on the whole to come from the south.

The two rivers are about thirty miles apart, and the intervening coast is fished by commercial nets, which are mainly concentrated near the river mouths. The most southerly of the Tweed group of fishings is Goswick, about five miles from the river mouth, and the most northerly of the Coquet group is Boulmer, about ten miles from that river. Between these there is very little fishing, though a few salmon are caught at Beadnell, a little south of Holy Island, and a fishery was formerly worked on Holy Island itself.

In the absence of a working fishery on Holy Island, the choice lay between Beadnell and Goswick as a tagging centre, and the latter was chosen on account of the better prospect of catching fish.

The nets at Goswick extend for about two miles along a sandy beach which runs from Tweedmouth to the eastern end of Holy Island, and indeed the Holy Island nets formed an extension of the Goswick site. Between 15. July and 17. August, 130 grilse and small salmon were tagged with hydrostatic tags, and scales from an additional 61 larger fish were collected. The work was carried out by students from King's College, Newcastle, during the vacation, under periodic supervision.

Up to the end of September, 55 fish (42·3 %) had been recaptured; of these, one was taken south of the River Coquet, at Druridge Bay, after 9 days, and one 8 miles E.S.E. of the Isle of May, in the Firth of Forth. This fish, recaptured 6 days after tagging, might be considered as a recapture at sea, since it was caught in 29 fathoms of water. A third fish was recaptured off St. Abb's Head, but the interval between tagging and recapture is uncertain.

The other 52 fish were all caught in the Tweed nets, after intervals of one to twenty-three days.

It thus appears that the Goswick fishery catches almost exclusively Tweed fish.

Salmon Stocks (W. G. Hartley). In addition to the collections of scales made during the three tagging experiments this year, collections have been received from the Hampshire River Board, and from the Northumberland and Tyneside River Board. The examination of these scales is still in progress.

Salmon and Sea Trout caught at Sea (W. G. Hartley). In previous years information has been received sporadically of salmon caught in mackerel nets at sea, and a system of rewards has been started for such information about salmon or sea trout caught outside territorial waters. The response to this has been unexpected; it appears not unusual for sea trout, at any rate, to be caught by trawlers or other fishing vessels in the North Sea. A total of 53 such fish has been reported in detail; five of these were sea trout kelts tagged in the River Coquet, one of which was tagged in 1954 and observed there again in April 1955, before being caught in July.

The fish have been well-grown; average length and weight are 21·4 inches (53 cm.) and 4·65 lbs., corresponding with fish two winters after smolt migration. Specimens up to 12 lbs. have been taken. Most of the returns came from Lowestoft, and referred to sites east of Smith's Knoll and in the ridges off the Norfolk coast. Depressions in the seafloor form a common site of capture, and sand-eels are reported as forming the diet in some cases. One boat was in contact with what the captain believed to be a shoal of trout moving E.S.E. for some hours; contact was lost when the water became clear.

It seems unlikely that salmon are in the same vicinity in any numbers.

Salmon and Sea Trout Tagging Experiment — River Coquet (A. Swain and W. G. Hartley). The trapping and tagging of salmon and sea trout smolts and kelts in the River Coquet at Warkworth was continued in the spring of this year. The wooden trap was placed in position in the fish pass at Warkworth Dam on the 3. April. On the 11. April the trap which had been used each year since 1951, began to break up. It was removed on the 14. but in the meantime a new trap was made and was in operation on the 17. This was left in position until the 3. June. During that time 6,031 sea trout smolts, 4,000 salmon smolts, 1,342 sea trout kelts, and 72 salmon kelts were tagged. All the kelts and sea trout smolts caught were tagged but only a proportion of the salmon smolts. As many of the smolts as possible were measured and a few scales were taken from one in ten of the fish.

Up to the middle of November, 10 % of the sea trout kelts had been recaptured—133 in all. 30 of these were taken in the Coquet, most of them in the tidal part during the spring and summer, but late in October two were caught further up the river at Felton and Rothbury respectively. 77 were netted off the Northumberland coast during the summer and a further 14 off the Durham and Yorkshire coasts. Two were caught in the River Tweed at Norham and Sandstell Fisheries. Four were caught off the East Anglian coast and six in the southern North Sea.

In addition, a loose tag was picked up on the Isle of Juist off the German coast. Once again very few of the sea trout smolts were recaptured during their first few months at sea. Except for four taken in the Coquet soon after they were tagged only three were caught. One was taken at Lygra, north of Bergen, and the other two were caught at Kessingland and Aldeburgh in Suffolk. Two of the salmon kelts were recaptured, one in the lower reaches of the Coquet and one off the Northumberland coast.

Before the trapping started this year, an attempt was made to tag some of the older parr in the upper waters of the Coquet and in one or two of the tributaries, with a view to obtaining an estimate of the smolt population. Fish were caught by means of a D.C. electric machine. It was only possible to tag about 300 young trout in this way and it was most difficult to determine whether they were the migratory form or not at that stage. Very few appeared on the trap. 123 young salmon were tagged in the same area, but only 10 were seen on the trap at a later date. The times taken for the fish to drop down varied. For instance, one fish took 83 days to get from the lower reaches of the Alwin to Warkworth, a distance of about 35 river miles, while another took only 51 days to travel from a position in the main river a mile or so above its junction with the Alwin.

During the year, recaptures of fish tagged in previous seasons were reported. None of the fish tagged in 1951 was recaptured but six of the 1952 fish were caught as kelts in the River Coquet. One of the sea trout was tagged as a kelt in 1952, the two others were tagged as smolts that year. One of these was caught on the trap, the other by rod at Warkworth. Three salmon kelts tagged as smolts in 1952 were taken on the trap.

Of the 1953 fish, 39 were recaptured and 34 of these were tagged as salmon smolts. Most of these salmon (28) were caught in nets off the Northumberland coast, and two were taken in the Coquet. One of them at Rothbury at the end of October. Single fish were caught at Hallowstell Fishery on the River Tweed and at Whitby, Yorks. In addition, two were netted off the west coast of Scotland at Ardnamurchan and off Wigtownshire. Only five sea trout were recaptured, four of them as kelts on the trap. These had been tagged as smolts. The other sea trout, tagged as a kelt in 1953, was caught in the southern part of the North Sea.

A larger number of the 1954-tagged fish were recaptured this year. 46 kelts were caught, 38 of which were taken in the River Coquet. All but nine of these were caught on the trap as kelts for a second time. Six were netted off Northumberland, one in the River Tweed and one in the North Sea. 19 of the sea trout tagged as smolts were recaptured, 8 of them in the River Coquet and 9 off the Northumberland coast. The other two were caught off the Lofoten Islands and at Askvoll (Norway). Three salmon tagged as kelts in 1954 were caught in the sea off Northumberland.

The 1955 recapture data are summarized in the table below.

Sea Trout and Salmon recaptured during the 1955 Season

	Stage when tagged			
Fish tagged in 1952	Sea Trout Kelts	Sea Trout Smolts	Salmon Smolts	Salmon Kelts
River Coquet	1	1	—	—
Trap at Warkworth	—	1	3	—
Total...	1	2	3	—
Fish tagged in 1953				
River Coquet	—	—	2	—
Trap at Warkworth	—	4	—	—
Northumberland coast	—	—	28	—
River Tweed	—	—	1	—
Yorkshire coast	—	—	1	—
West coast of Scotland	—	—	2	—
North Sea	1	—	—	—
Total...	1	4	34	—
Fish tagged in 1954				
River Coquet	7	8	—	—
Trap at Warkworth	31	—	—	—
Northumberland coast	6	9	12	3
River Tweed	1	—	—	—
East Anglian coast	—	1	—	—
North Sea	1	—	—	—
Dutch coast	—	1	—	—
Lofoten Islands	—	—	1	—
Norwegian coast (Askvoll)	—	—	1	—
Total...	46	19	14	3
Fish tagged in 1955				
River Coquet	30	4	—	1
Northumberland coast	77	—	—	1
Durham and Yorkshire coasts	14	—	—	—
River Tweed	2	—	—	—
East Anglian coast	4	2	—	—
North Sea	6	—	—	—
Isle of Juist (tag only)	1	—	—	—
Norwegian coast (Lygra)	—	1	—	—
Total...	134	7	—	2

As is stated in the report on the East Anglian sea trout tagging work, about 700 of the fish handled were sea trout spending their first few months in the sea. Only one of these fish had been tagged in the Coquet and the others showed no sign of having been tagged. It can also be assumed that many others were caught in that area by fishermen not taking part in the tagging experiment, yet only one other tagged fish was reported. From this it would appear either that the population of sea trout off East Anglia contains only a very small proportion of Coquet fish or that the trap at Warkworth catches only a fraction of the smolts leaving the river. It seems more likely, however, that the tag becomes detached from the sea trout smolt at so early a stage so that no wound

or scar would be visible later on. For example, over 1,300 sea trout kelts were caught on the trap this year and nearly all of them should have left the river as smolts in the years 1951 to 1954, i. e., the years during which the trap was in operation and smolts were tagged. Yet only five were found with smolt tags although several thousands of smolts had been tagged during those years. On the other hand, 31 of these kelts still had tags which were attached to them (as kelts) in the spring of 1954. With a large fish like a kelt it is possible to employ a strong stainless steel wire firmly attached to the fish. With the smolt, however, a finer, less springy silver wire has been used, and it has been customary to leave a small loop in the wire to allow for the growth of the fish. As the sea trout is relatively slow-growing in the sea compared with a salmon, and more coastal in its habits, it is quite possible that many of the tags get pulled off in weeds and nets. The recapture of salmon smolts after one or two years in the sea has been better. The salmon grows rapidly when it gets to sea and many of the tags have been almost buried in the skin of the fish when found. This, of course, makes it difficult for the captor to observe a tag, but at the same time the tag is "fixed" and there is no loop to catch in weeds and nets.

East Anglian Sea Trout Tagging Experiments (1955) (A. Swain, F. W. K. Gervers, and W. G. Hartley). A tagging experiment similar to those of 1949 and 1950 was carried out off the East Anglian coast during the summer months. It was hoped to catch some of the sea trout tagged in the River Coquet during the early part of the year and release them again to see if any of them would return to that river.

Two tagging teams were based at Hemsby and Aldeburgh respectively and sea trout were tagged at Hemsby, Kessingland, Southwold, and in the Orfordness area. Altogether 788 sea trout were tagged between 15. June and 31. August. 616 were tagged at Hemsby, 147 near Orfordness, 18 at Kessingland, and 7 at Southwold. The fish were caught by commercial fishermen using one-inch mesh seine nets, and the sea trout selected for tagging were purchased at the current market prices.

Although the weather was fine throughout the period, the anticyclones produced quite strong north-easterly winds on that coast, resulting in heavy swells, and on several nights it was not possible to do any fishing. At Hemsby it was sometimes possible to use a drift-net when the sea was not calm, but these nets had a two-inch mesh and the fish caught in this way were usually gilled and unsuitable for tagging. Quite a large number of the fish were tagged during August.

About 700 of the fish tagged had left the rivers as smolts in the spring of this year. However, only one of these fish carried a smolt tag although over 6,000 smolts were tagged in the River Coquet this year.

The sea trout caught off East Anglia were all tagged with the Lea hydrostatic tag and up to the end of October, 55 of them have been recaptured.

Details are as follows:—

Hemsby Fish

46 of these fish have been recaptured, of which 31 were caught locally. Of the remaining 15, 5 were caught to the south (3 at Kessingland and 2 near Orfordness), and 10 went north, 3 of them being caught at Yarmouth, Cromer and Blakeney respectively. Six were recaptured in the Whitby and Filey areas of the Yorkshire coast and a single fish turned up in the tidal waters of the River Coquet. These last seven fish were all tagged during the last week of June (during the first fortnight of the experiment). One of the fish was recaptured at Filey within 9 days of being tagged at Hemsby but the one caught in the River Coquet was tagged on 27. June and recaptured on 9. August. All seven fish were sea trout which had already spent at least one complete year in the sea, so it looks as though they would be returning to their rivers. On the other hand, a 4 lb. fish tagged at Hemsby on 22. June was recaptured near Orfordness as late as the 14. August.

Kessingland Fish

Two were recaptured, one off Orfordness after an absence of about 30 days, the other at Southwold after 3 weeks.

Southwold Fish

None was recaptured.

Orfordness Fish

Seven of these were recaptured of which 3 were taken locally. The other four were caught to the north —one at Kessingland after an absence of 9 days, one at Southwold after 7 days, one at Hemsby (no recapture date available except that the fish was tagged and caught in August), and the furthest north was one caught at Blakeney on the north Norfolk coast after 50 days. There were no reports of any recapture south of the Orfordness area. This is not surprising as there is no commercial sea trout fishing to the south.

The results obtained from this experiment differ somewhat from those obtained from the earlier experiments carried out in 1949 and 1950. In the earlier tagging work, nearly all the fish, except those recaught close to the place of tagging, were recaptured to the south and only one fish was caught outside the East Anglia area. This sea trout was recaptured in the River Tweed some months afterwards.

There appears to be a mixed population of sea trout off the Norfolk and Suffolk coasts. The older fish, some of which are making their way back to the rivers are joined later in the season by young sea trout which had migrated as smolts some three to four months previously.

Salmon Races (F. W. K. Gervers). The popular belief that salmon return to spawn in the river in which they were themselves hatched and reared has been confirmed at least qualitatively by a good many tagging experiments. If this segregation at spawning

time affects most fish one would expect that in time small genetic differences would develop between salmon bred, for example, in the far north of Scotland and those in the south of England. It is a common belief among fishermen that there are differences of this kind but they have never been seriously studied. Last winter Mr. Gervers began some experiments designed to explore this possibility. He obtained salmon eggs from a number of widely separated rivers and hatched them under uniform conditions in the laboratory. Young fish at various stages of development were then preserved for study of morphological characteristics such as the distribution of pigment and variations in numerical characters such as the number of vertebrae and fin rays. Unhappily owing to the death of Mr. Gervers this work must cease for the present and it is not known when it will be practicable to resume it.

II. Scotland (K. Pyefinch).

It is satisfactory to report that it has been possible to begin work on the modified scheme of salmon research during 1955. After surveys carried out during the summer, some 125,000 ova have been planted, using "perspex" boxes, in two small streams running into Lui Water, which is one of the upper tributaries of the Aberdeenshire Dee. It is planned to estimate the percentage hatch early in 1956 and then to follow the history of the resulting alevins, fry, and parr until they leave the Lui. This river is especially useful for studies of this kind, as falls a short distance above its confluence with the Dee prevent the ascent of adult fish.

A preliminary survey was also made of the River Meig, a tributary of the River Conon (Ross-shire) to see if similar studies could also be made there, but this survey has not yet been taken far enough to decide whether this will be possible.

No kelts were tagged during the autumn and early winter on the Aberdeenshire Dee, but the numbers tagged during the autumn of 1954 were supplemented by tagging kelts caught in the estuary during the winter and kelts taken by anglers during the early months of the year. These operations added 572 salmon kelts and 66 sea trout kelts to the total tagged during 1954. As most of the fish taken by anglers were "well mended", it will be interesting to compare the returns from these fish with those from fish tagged in the spawning streams. A number of recaptures were made during the downstream migration and some of the sea trout have subsequently been recaptured as clean fish. As before, most of the latter recaptures were made in the Dee, though some were made at netting stations on the coast.

In the last report reference was made to the recapture of sea trout, tagged as kelts on the Dee, at coastal netting stations ranging from the north Aberdeenshire coast to Montrose Bay. In order to discover whether a movement of sea trout took place back to the Dee from this length of coast, fish were tagged this year at a number of netting stations from Macduff in the north to Rockhall, near Montrose, in the south. About 15 % of the fish tagged were recaptured and, though a proportion of these were taken again in the Dee, the results were disappointing in that they did not clearly show migrations of the kind expected.

When carrying out tagging operations in the Dee during the autumn of 1954, a number of instances were noted in which sea trout had returned to spawn again in the same stream, and at virtually the same date, as they had twelve months previously. To investigate this phenomenon further, a trap was operated in the lower reaches of the Cannie burn during the autumn of 1955. Between 7. October and 10. November, 2,117 sea trout passed through this trap. The tagged fish were included in this total and, though it was satisfactory to find that all those had been tagged on the Cannie in 1954, the number of tagged fish returning was disappointing. The operation of the trap, however, enabled observations to be made on the characteristics of the spawning runs of sea trout which could be compared with the results obtained previously on brown trout. The existence of the trap also allowed some preliminary observations to be made on the homing behaviour of salmon and sea trout. These will be repeated and extended during 1956.

Tagging of salmon caught in the bag nets at Rockhall, near Montrose, was continued on a reduced scale this year but 201 salmon and grilse were tagged between the middle of May and the end of July. The recaptures recorded suggest that, contrary to general belief, coastal nets do not take a higher proportion of the catchable salmon during a dry summer (as in 1955), when access to freshwater is impeded than in a normal or wet summer when access to freshwater is readily possible.

As in 1954, the staff of the North of Scotland Hydro-Electric Board tagged female kelts which had been impounded for stripping above Loch Poulary (on the Ness system) and at Loch na Croic (on the Conon system).

The statutory diagnostic service for furunculosis has continued to operate at the Bacteriology Department, University of Aberdeen, and during the twelve months ended 30. September 1955, 79 fish were submitted for examination. Of these 10 were found to be suffering from furunculosis and 23 from Dee disease. In addition, work has been begun on the sources of infection of furunculosis and Dee disease and a preliminary classification has been made of the non-pathogenic organisms isolated from fish. Investigations have also been made into the cause of a condition found in sea trout during the later part of the summer, in which the affected fish showed wounds on their bodies, usually on the shoulder and often of the left shoulder. Fish affected in this way were noted in the Aberdeenshire Dee, Montrose Bay, and the Tweed.

The field fertilization experiments in west Sutherland, conducted from the Brown Trout Research Laboratory, Pitlochry, have been continued and

further applications of fertilizers were made during 1955 to the lochs which had been treated during 1954. These additions produced interesting chemical changes and, in some cases, had a marked effect on the phytoplankton. Detailed investigations are being made on the effect of these additions on the trout in these lochs and, though there are signs that beneficial effects are being produced, further samples are needed to confirm these indications. No further additions of fertilizers are planned for 1956, but the fish will again be studied closely and these studies will be supplemented by observations on the bottom fauna and phytoplankton.

Work on the biology of brown trout has been actively continued and particular attention has been paid to the physical characteristics of the gravels of spawning beds. As a result of these studies, it has been possible to suggest ways in which streams could be modified so as to provide spawning grounds for trout and these methods are now being tested in the field. The investigations on the fish populations of Loch Tummel have virtually been completed and it has been decided to study the effects of flooding on the growth of trout further in Loch Garry (Inverness) the area of which is also shortly to be increased because of hydro-electric developments. Work on this project started towards the end of the year.

Perhaps the most important aspect of the botanical work during the year has been the studies made to discover whether NYGAARD's Phytoplankton Quotient can be applied to Scottish lochs. The preliminary assessments, from some 18 lochs of diverse character, proved most encouraging and this survey has therefore been extended to about 150 lochs, situated in all parts of the country. If this quotient proves to be a reliable indicator of trophic status, it should prove a most valuable means of assessing the productivity potential of a loch and studies are being made to discover whether a similar relationship holds for other parts of the freshwater community, especially the bottom fauna. The preliminary results from the latter investigation are promising.

In addition to the investigations just mentioned and surveys made in connexion with the field fertilization programme, work on the bottom fauna has particularly concerned the seasonal changes in the emergence of insects from fresh water. Using emergence traps floating on the water surface, a year's survey has been completed and this study of seasonal variations has been supplemented by studies of the diurnal variations in emergence, which have been made roughly at fortnightly intervals over the period when emergence was taking place most rapidly.

The field fertilization programme and the extensive series of analyses required by the investigations of the Phytoplankton Quotient have occupied much of the time of the chemical section, but further work has been done on the adsorption of phosphate to bottom deposits and on the phosphorus content of aquatic macrophytes. The section has also played an important part in the treatment of various parts of the Errochty Water system with derris extract. These operations were carried out for the North Scotland Hydro-Electric Board, who were anxious to eliminate pike from this river system before its waters began to be impounded to form the Errochty Reservoir.

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Shellfish Committee

1955

By B. Havinga

CRUSTACEA

Belgium

(E. Leloup).

Crangon vulgaris. Biological studies of the shrimp were continued, to ascertain the annual changes in the stock of shrimps on the Belgian coast. The following data were obtained:—

(a) Identification of all the organisms caught with the shrimp trawl.
(b) Assessment of the total quantity of shrimp caught.
(c) Determination of the length distribution of a 1 kg. sample of uncooked shrimps, and the weight of each size-group.
(d) Assessment of the quantities of shrimps caught commercially and non-commercially.
(e) Determination of the length distribution of a 1 kg. sample of commercially caught shrimps, and the weight of each size-group.
(f) Records of the number of shrimps with or without eggs in each size-group.

Denmark

(E. Ursin).

Nephrops norvegicus. Quantitative fishing was carried out with the R/V "Biologen" in the northern Kattegat in September, and in the Skagerak and Kattegat in June and November. About 300 *Nephrops* were marked by punching holes in the telson.

Pandalus borealis. Quantitative fishing was carried out in the northern Kattegat and the Skagerak from the "Biologen" in June.

In West Greenland trawling experiments were carried out with the "Adolf Jensen" and the "Immanuel".

Samples for the study of age composition, age, and growth were collected throughout the year in the Godthåb and Julianehåb districts.

Leander adspersus. The investigations were continued.

England

(H. A. Cole).

Homarus vulgaris. Types of pot were compared. Side-eyed pots all caught more than top-eyed pots. Preliminary marking experiments revealed very little movement and no directional migration of lobsters. Lobsters are being measured in several ways and it is hoped that it will be possible to correlate the size selection of the pots with eye-size, cane-spacing, etc.

Pandalus montagui. The fishery in the Thames area for pink shrimps was good during the season though it finished earlier than usual. Very high water temperatures caused the shrimps to move off shore and unusually clear water may have reduced fishing efficiency.

Migratory shrimps were sought in deep water during February. Shrimps from the Wash either disperse or move to grounds not yet located. Commercial densities occurred, however, at a depth of 18—20 fathoms off Aldeburgh, where the food supply was very abundant.

Apparently a high percentage of unmarketable shrimps are retained by the normal nets and mesh-selection experiments are now in progress.

Germany

(P. F. Meyer-Waarden).

Crangon vulgaris. The investigations of the composition of the shrimp catches which were begun in 1954 were continued in 1955. Samples were obtained from March to December off Wyk on Föhr and at Husum, Tönning, Büsum, Friedrichskoog, Cuxhaven, Sillenserdeich, Varel, Wilhelmshaven, Neuharlingersiel, Norddeich, and Greetsiel. As in the previous year, the object was to study the damage caused by the shrimp fishery to young food-fish, in connexion with the North Sea Convention of 1946 for fish conservation.

The number of samples collected was 863 (511 in 1954), with a weight of 4,300 kg. In each sample species were distinguished and the size distribution was determined separately for each species. The data are at present being examined.

Chemico-physical investigations were continued in order to study the factors which promote bacterial deterioration of shrimp meat.

Carcinus maenas. The damage caused by *Sacculina* was investigated.

Ireland

(F. A. Gibson).

Leander serratus. Pot fishing trials were continued and a type of creel was developed to meet requirements on these coasts. This creel has proved

successful. Trawling for prawns was also investigated without any marked success. Common prawns were found to have widespread distribution along the south and west coasts.

Cancer pagurus. Experimental fishing with creels was started on the south-west coast. Only 34 creels were fished. They produced a gross-average fishing effort of 18 dozen crabs per fishing day during September, October, and the first week in November. In the latter month the condition of the crabs so deteriorates that they become an uneconomic proposition. A considerable expansion of crab-fishing is expected to take place now.

Nephrops norvegicus. In October 1955 beam trawl experiments in Bantry Bay revealed the presence there of stocks of Norway lobster. These will be the subject of experiment in 1956.

Netherlands

(B. Havinga).

Crangon vulgaris. Routine stramin-net hauls were started, for the study of the migration, density, and growth of larvae and juvenile stages of shrimps.

Statistical investigation of the catch of shrimp per unit effort, which was started in 1946, was continued. A report on the results has been prepared and will be published shortly.

Homarus vulgaris. Considerable mortality occurred during July among stored lobsters, which showed a heavy parasitization with the gill parasite *Nicothoë astaci*. A correlation was found between the rate of mortality and the rate of parasitization. The mortality ceased when *Nicothoë* disappeared after the lobsters had moulted.

Scotland

(H. J. Thomas).

Survey of Lobster and Crab Fishery

The present cycle of this survey has been completed and the results prepared for publication.

Observations have been carried out on the relationship between overall length and carapace length and between these measurements and the weight of lobster.

Homarus vulgaris. About 400 marked lobsters, coded according to carapace length, were liberated off the south-east Scottish coast during May 1955. Returns indicate a growth-rate of about 14 % for lobsters of 23—30 cm. overall length.

A further liberation is proposed.

Parasites. Sampling of lobsters for the gill parasite *Nicothoë astaci* has been carried out monthly in Orkney waters, and the work has been extended to the west coast of Scotland. Investigations into the level of parasitization of lobsters and the biology of the parasite have been undertaken.

Physiology. Some preliminary work on the reaction of lobster blood to oxygen want has been undertaken.

Nephrops norvegicus. A series of observations on the carapace length and overall length of the Norway lobster has been carried out. Results of comparative fishing experiments on this species suggest that the behaviour of the seine net is markedly different from that of the otter trawl.

Crangon vulgaris. A short investigation has been made of the shrimp fishery off the south-west Scottish coast.

Sweden

(H. Höglund).

Nephrops norvegicus. Samples from some twenty trawl catches in the Skagerak were used to study length and sex.

Homarus vulgaris. In connexion with the release of berried lobsters at the beginning of the close season, 750 females in berry were marked by means of holes punched in the tail fins. These experiments were conducted at several points in the northern part of the Bohuslän archipelago. Up to the end of the year about 26 % of the lobsters marked were recaptured.

MOLLUSCA

Belgium

(E. Leloup).

Oysters. A study was made of the growth-rate of the oysters cultivated in the sluice dock (Bassin de Chasse) at the port of Ostend.

Steps were taken to establish a method of sanitary control for shellfish.

Mytilicola intestinalis. As in previous years, during April, June, and September the mussels living on the coastal defences along the Belgian coast from Knocke to La Panne were studied, in order to ascertain the degree of infection by this copepod.

England

(H. A. Cole).

Oysters. Work at Burnham-on-Crouch on factors affecting oyster breeding and spatfall was expanded. Comparison was made between the Rivers Colne, Blackwater, Crouch, and Roach. Regular surveys of the population of *Asterias rubens* was made and the distribution of *Crepidula fornicata* was studied.

Mussels. The spread of the parasite *Mytilicola* was examined and the optimum conditions for growth of mussels were also studied.

Cockles. Information on factors affecting growth and survival has been obtained by examining samples from widely different localities and studies on the depredations of oyster catchers (*Haematopus*) on cockle beds were completed.

Escallops. Gonad development was examined.

Sanitary Control. A roll-tube medium for use in bacteriological examination of shellfish has been perfected and is now being manufactured commercially.

This should result in simplification and standardization of procedure between different laboratories.

The roll-tube method has also proved accurate and simple for the examination of polluted sea water.

As requested by the I.C.E.S. Shellfish Committee the methods of examination of shellfish have been compared. That of Clegg & Sherwood yields an accurate and detailed result overnight. It involves the minimum of apparatus and labour. The method used by the Fishmonger's Company gives a result overnight but it is somewhat unreliable and relatively uninformative. Bigger's method, though it gives an overnight result which is reasonably accurate and detailed, involves the use of great quantities of labour and glassware. The Canadian M.P.N. and French methods, though economical in glassware and labour, take 4 days to yield results. The method of Clegg & Sherwood is, therefore, considered the most satisfactory.

Comparative studies of pollution of different shellfish are in progress.

Marine Nanoplankton. New species are still being isolated and described. Many are in unialgal culture. The groups Chlamydomonadaceae and Polyplepharidacea are being revised—there are apparently about 50 species in the United Kingdom. In addition to coastal samples, collections have been made in arctic waters. Here, colourless flagellates are dominant.

Bacteria-free cultures of species both suitable and unsuitable for larval food have been established and are now being subjected to biochemical analyses.

Ciliary Motion Studies. Oyster larvae were immobilized and the feeding process was studied in detail. A method of continuously recorded shell movement and pumping rate of oysters and mussels has been developed.

Sertularia argentea. Observations of growth-rate, breeding, etc., were carried out.

France

(Institut des Pêches).

Ostréiculture

Les conditions hydrologiques ont été étudiées dans les centres ostréicoles; chaque rivière bretonne possède une nette individualité.

Les prévisions à long terme de la date des premières émissions de larves d'*Ostrea edulis* et de *Gryphaea angulata*, basées sur des données statistiques, ont été confirmées par l'expérience.

1,300 échantillons de plancton ont été prélevés dans les zones de production de la côte atlantique. Leur examen a permis de déceler les émissions de larves et d'en suivre l'évolution. Les dates les plus favorables à l'immersion des collecteurs ont été indiquées aux ostréiculteurs. Les températures, convenables pendant la saison de reproduction, ont conduit à une fixation satisfaisante dans l'ensemble.

L'étude qualitative du zooplancton et du phytoplancton de ces régions a été faite.

Les essais de nouveaux types de collecteurs en cellulose moulée ont été continués. Leur utilisation tend à se généraliser pour le captage des huîtres portugaises, en particulier dans la vallée de la Seudre. Leur pouvoir de fixation est grand. Le détroquage est facile; il est effectué sans pertes et l'utilisation de la machine est possible.

Dans le but d'augmenter le taux de fixation du naissain, certains sels ont été ajoutés, dans la région d'Arcachon, aux enduits enrobant les tuiles collectrices. Le sulfate de fer a donné des résultats tangibles.

De nouveaux emplacements, susceptibles de convenir au captage, ont été prospectés et délimités dans la Vilaine et dans l'estuaire de la Gironde.

L'étude de la reproduction des huîtres plates en claires a été reprise. La fixation, obtenue par unité de surface, a été la meilleure depuis le début de ces expériences et comparable à celle constatée parfois dans les grands centres de production de l'espèce.

La fertilisation des eaux et des terrains ostréicoles par l'apport d'engrais minéraux a donné des résultats positifs dans les claires; sur les parcs de plaine mer l'action est peu sensible; les essais sont néanmoins poursuivis.

Des observations précises ont montré que la croissance des huîtres est favorablement influencée par l'élevage en casiers grillagés.

La corrosion trop rapide des divers fils galvanisés utilisés en ostréiculture pose d'importants problèmes; un fil d'acier au nickel-chrome, souple et robuste, s'est révélé inaltérable.

Le stock des gisements naturels a été inventorié. La reconstitution de certains d'entre eux a été accélérée dans le Morbihan et entreprise dans la Gironde et dans le bassin d'Arcachon.

Des études biométriques ainsi que des recherches sur les maladies, ennemis et parasites, sur les moyens de lutte, sur le verdissement et la composition chimique des sols, sur les constituants de la matière organique de l'eau de mer et des vases de parcs ont été poursuivies.

Mytiliculture

La reproduction des **Moules** a été suivie et les périodes de fixation déterminées.

Des cultures, sur parcs en Bretagne et sur bouchots dans la région de La Rochelle, ont permis d'étudier la croissance.

La présence de *Mytilicola intestinalis* St. a été constatée pour la première fois dans les moules en provenance des gisements naturels de la Loire.

Autres Mollusques. L'étude de *Pecten maximus* L. et de ses déplacements a été continuée.

Les gisements de *Chlamys varia* (L.) en Charente-Maritime ont été prospectés; un essai de reconstitution a été tenté.

Un gisement de *Venus mercenaria* L. a été découvert dans la rivière du Bono, côte sud de Bretagne.

Contrôle sanitaire. Une nouvelle méthode de colimétrie, effectuée sur membranes filtrante et milieu solide, a été essayée pour les eaux de mer et les coquillages.

Ireland

(F. A. Gibson).

Oysters. It was not found possible to keep the oyster beds at Clew Bay under observation during the season, but samples of oysters from this region were examined from time to time.

Pecten maximus. Investigations into the life history and exploitation of stocks of escallops in Irish waters were continued and a report on the subject has now been prepared.

Netherlands

(P. Korringa).

Oysters

Spatfall prediction based on plankton observations has been carried out throughout the summer season. Though unusually late, setting was abundant both on tile collectors and on mussel shells.

The steadily increasing oyster population made it desirable to continue our studies on biological productivity in the Oosterschelde. Quality and quantity of phytoplankton and several factors associated with plankton development have been determined each week throughout the year, in water samples collected in the centre of the oyster district.

Though water temperatures were for many weeks above the critical point of 19°C. in July and August 1955, shell disease was hardly noticeable in spat and yearling oysters. This demonstrates that the continued cleaning of the oyster grounds pays ample dividends. Both shell disease and slipper limpets are so greatly reduced in incidence and numbers thereby that chemical treatment of young oysters, practised for many years on a large scale and with considerable success, is no longer necessary. Moreover, there are many grounds, once semi-derelict, which have regained the productivity they had before 1930, when production was not hampered by shell disease and slipper limpets. Spat production with mussel shells is more and more concentrated in the eastern part of the basin of the Oosterschelde, as in former times, so that the deeper beds of the Yersche Bank can be used more exclusively for the production of marketable oysters.

Polydora ciliata, on the other hand, is a serious pest in some areas west of Yerseke. It renders the shells brittle, so that they are liable to break either during packing or in opening the oysters. Though it is possible to kill *Polydora* in living oysters with D.N.O.C., shells once drilled seem to be exceptionally vulnerable to reinfection.

The proposal to cut off several estuaries in the south-west of the Netherlands—in an effort to promote the safety of the inhabitants of the islands and to improve freshwater economics (the so-called Delta-plan)—is casting its shadow on the future of the Dutch oyster industry. It is being considered to cut off the Oosterschelde, the heart of the Dutch shellfish industry. The question has been raised whether the Zealand oyster industry could be transferred to other Dutch estuarine waters. Since the oyster is so exacting about environmental conditions, it seems hardly possible to create a remunerative oyster industry in waters which have thus far been found of little or no use for oysters. Hydrographical and biological conditions in such areas can, however, be changed by engineering works. It is the task of the Government Institute for Fishery Investigations to advise on changes considered necessary to render a given saltwater area suitable for the cultivation of oysters.

The final advice cannot be given without detailed investigations covering both analyses of the present hydrographical and biological conditions prevailing on good oyster grounds, and experimental work in a new, man-made area comparable to that which the engineers have in mind to take the place of the oyster grounds in the Oosterschelde. Spatfall being especially vulnerable, it will also be necessary to study the problem of breeding oysters under artificial conditions, first on a laboratory scale, then commercially.

To carry out this work a new field laboratory was erected at Wemeldinge in 1955. This building, which is temporary, measures 21×6 m., and is equipped with sea water brought in by a huge syphon which passes over the dike from the side of a deep channel in the Oosterschelde. A vessel has been specially built and equipped for investigating the hydrographical and biological conditions and for technical oyster-culture work in an artificial basin. The investigations which, it is hoped, may lead to the continuation of the Zealand oyster culture—now yielding some 25,000,000 oysters annually—were begun in July 1955. If no practical solution can be found in 10 years, and the Oosterschelde is cut off from the sea, this water will gradually become fresh, which will entail the end of the flourishing Zealand oyster industry.

Mussels

It appears that excellent marketable mussels can be grown on a fair scale in Zealand waters in the presence of the parasite *Mytilicola intestinalis*. The ecologic balance is in favour of the mussels if care is taken to reduce the population of infected mussels as much as possible during the winter season, to plant whenever possible only half-grown mussels on the beds, to select the shallower grounds, and to avoid huge concentrations of mussels in one body of water.

The western part of the Waddensea being still entirely free from *Mytilicola* cultivation in the old style can be practised there, by starting with seed mussels, using deeper grounds for growing and fattening, and concentrating enormous quantities in the best areas. The seed mussels should, however, be collected in a *Mytilicola*-free district, i. e., in the western part of the Waddensea itself. The natural production of seed mussels having been rather irregular in the past few years, efforts have been made to improve production in the Waddensea by means of artificial collectors. The efforts were quite successful, but natural setting of seed mussels was also fairly good in the Waddensea in 1955.

Sanitary Control

Experiments were carried out to compare the reliability and suitability of the methods in use for both oysters and mussels. The result was that the Sherwood method was considered to be acceptable internationally, with the standards of purity devised by Sherwood and Scott Thomson.

Portugal

(H. Vilela).

Gryphaea angulata

(a) Temperature and salinity were observed at several places in the River Tagus.
(b) Plankton samples were obtained at these places.
(c) Oyster collectors (tiles) were set up at several places between Alcochete and Moita to determine the time and abundance of spatfall.
(d) Spat collectors were set up near the laboratory, and were kept under constant observation, in order to obtain spat of known age for histological studies.
(e) Microscopical studies were made of the development of the gonads and sexual phases.

Ostrea edulis

A small bank of flat oysters having recently appeared in a branch of the Ria de Aveiro (Canal de Mira, northern part of the west coast), attempts were made to collect spat and to examine the possibility of exploiting the stock. Spat collectors were placed on the sand, but the results were not favourable.

Scotland

(H. J. Thomas).

Scottish Marine Biological Association

The programme of reviving Scottish oyster fisheries was continued, in two parts.

The first part consisted of experimental layings made to discover places suitable for growing and fattening young oysters. This work was extended to new areas, one in Argyll on the mainland, one on the Isle of Soay, and four in the Isle of Lewis. Early results from Lewis show that the places chosen vary widely in the growth and fattening which they induce in relaid oysters.

The second part of the programme was the start of a three-year scheme to test West Loch Tarbert, in Argyll, as a self-supporting oyster ground on which a commercial fishery might be established. This area is an arm of the sea 9 miles long and only a few metres deep for much of that distance. A survey was made of the deposits on the sea bed, to find how much ground was of the right kind so take oysters, and a survey was also carried out of the benthonic animals. Hydrographic and meteorological records were kept throughout the summer. A stock of 150,000 two-year-old Brittany oysters was laid as near the head of the loch as possible, and the course of their breeding followed.

As a result of suitable bottom conditions and high water temperatures, many larvae were liberated. Growth of larvae was poor during July and the early part of August, when small flagellates were scarce in the water, but in the second half of August, these flagellates were more plentiful, and larvae grew to settling size. It may be significant that flagellates were scarce during the period of exceptionally bright sunshine, and multiplied in duller weather. Late in August a light settlement of spat took place. This settlement was heaviest near the parent stock.

The main enemies of oysters in this area are *Asterias rubens*, at a density of about one per square metre, and the ascidian *Ascidiella aspersa*, which competed with the oyster larvae for settlement space.

Mortality in the parent oysters was highest in the weeks following laying of the stock, and later decreased. Over the whole period from April to September, mortality was about 15 %, which is not unduly high.

The first season's work indicates that West Loch Tarbert is a promising site for an oyster fishery, but research will have to be continued for several years.

Pecten maximus. A paper on the growth and breeding of this species in the Irish Sea is in preparation.

Spain

(J. M. Navaz).

Conchyliculture. Le Laboratoire Océanographique de Vigo de l'Institut Espagnol d'Océanographie a effectué des nombreuses inspections et reconnaissances des lieux qui avaient été demandées pour l'installation de nouveaux parcs et de viviers de culture, principalement pour les moules (*Mytilus*).

Il a été fait trois projects detaillés sur la possibilité d'exploitation des parcs d'huîtres, moules, etc., ce qu'on nous a transmis de la part de l'Institut Social de la Marine.

On a obtenu des indications sur le développement et la biologie de la moule cultivée dans la ria de Vigo.

Pendant la campagne de l'été effectuée par le garde-côte "Xauen", bâtiment océanographique de l'Institut Espagnol d'Océanographie, on a fait une intense campagne de prospections malacologiques et on a obtenu des résultats utilisables pour la formation d'une carte des gisements des mollusques comestibles des rias de la Galice.

Sweden

(H. Höglund).

Oysters. Eight thousand oysters slightly above 6 cm. in size were transplanted from natural banks in the north of Bohuslän to various places in the south of the province.

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Hydrographical Committee

1955

By Dr. G. Böhnecke

Belgium

(E. Leloup).

"West-Hinder" Lightship

(a) A surface-water sample was collected every three days for the determination of temperature, Cl, salinity, and alkalinity.

(b) Once a week, a water sample was collected for complete chemical analysis—Cl, salinity, alkalinity, sulphates, calcium, and magnesium.

(c) Continuous current measurements were made with the "Carruthers Vertical-log Current-Meter".

Fishery Research Vessel "Hinders"

(a) Gravelines-Deal Section (Stations 13, 14, 15, and 16) and off Nieuport on the Belgian coast (Station B 22), once a month throughout the year:—

1. A water sample was collected at 20 m., 40 m., and at the bottom according to the depth of water for temperature, Cl, salinity, and alkalinity determination.
2. A water sample was collected at 20 m. at each station for complete chemical analysis (Cl, salinity, alkalinity, sulphates, calcium, and magnesium).

(b) On all cruises for experimental fishing, water samples were taken at the surface at various places off the Belgian coast.

The data obtained were regularly communicated to Copenhagen for use in the monthly charts of the North Sea and English Channel and for publication in the *Bulletin Hydrographique*.

Denmark

(H. Thomsen).

Cruises. Observations of temperature and salinity were made on the "Biologen's" cruises in the Kattegat and Belts at various times between March and December. Observations of temperature, salinity, and oxygen content were made in the Baltic near Bornholm at the end of August.

In the North Sea and Skagerak the "Dana" carried out hydrographical observations from the middle of April to the beginning of June and again during September. Sections R and S were worked at the end of April and repeated in part in May, June, and September. The "Dana's" investigations were supplemented by similar work carried out by the "Jens Væver" on the Bløden Ground in April, July, August, and October-November.

The Shetland-Faroe section was run by the "Dana" at the beginning of June; for the rest of the month the "Dana" worked in the area north and north-west of the Faroes, and the section from the Faroes to Greenland along 62° N. was worked in the first week of July.

During the rest of July and until the middle of August the "Dana" worked in the Davis Strait, and ran one section from Cape Farewell to Hamilton Inlet and other sections across the West Greenland fishing banks. This work was supplemented by investigations carried out in coastal waters by the motor-cutters "Immanuel" and "Adolf Jensen". The latter made observations of t and S at fixed stations in Godthåbsfjord approximately once per month throughout the year, and on Fylla Bank in March and May. In the middle of August the "Dana" worked the section from Cape Farewell to 51°00′ N., 11°10′ W.

Observations from Commercial Vessels. Surface samples were collected by commercial vessels on the Skagen-Greenland and Esbjerg-Grimsby/London routes.

Observations at Lightvessels and Coastal Stations. The following routine hydrographic observations were made by the Danish Meteorological Institute:—

1. Daily observations of temperature and salinity at 12 lightvessels and 19 coastal stations.

2. 4-hourly estimations of the surface current at 12 lightvessels.

England

(J. R. Lumby).

Fisheries Laboratory, Lowestoft

In the southern North Sea temperature and salinity surveys were made throughout the first 3 months of the year, in connexion with plaice investigations. Similar surveys were made in June, in connexion with plankton studies, and also in October, to discover the hydrographical conditions prevailing at the beginning of the East Anglian herring fishery.

Further experimental work on the measurements of currents by towed electrodes and the recording of surface and subsurface temperature was done.

In the Barents Sea, the West Bear Island section was worked in April and the Norway-Bear Island section in December. A section from Vardø towards Goose Bank was also worked in December. Observations on the relationship between water temperature and cod distribution were made in the Bear Island—Spitsbergen—Hope Island area between March and September, and in the south-eastern Barents Sea in January and December.

In addition to the maintenance of the routine observations in the waters round the British Isles from commercial vessels, lightships, and Ocean Weather Ships, the use of recording thermometers was extended to further vessels, including a lightship, and in several vessels a device for obtaining water samples from the main inlet was brought into use.

National Institute of Oceanography, Wormley

The Institute has developed a neutrally buoyant float which can be loaded to float at predetermined depths. It is fitted with an acoustic transmitter which allows it to be followed for 3 or 4 days. The details of construction and early experience have been described by J. C. Swallow in Deep-Sea Res., **3**, 84; recent measurements indicate considerable variability in the deep currents and speeds up to 4 miles a day. Plans have been made for collaborating with Dr. Tait and Professor Mosby to obtain simultaneous measurements of deep currents and density distribution in the Faroe-Shetland Channel and Sognefjord sections.

Research on waves and wind drift has been continued; that on wind drag has been summarized by H. Charnock in Quart. Journ. Roy. Met. Soc., **81**, 639. Theoretical and practical investigations have been made of storm surges, which are described by J. Crease in the new periodical *Journal of Fluid Mechanics* and by J. and M. Darbyshire in Proc. Roy. Soc.

A number of improvements have been made to Dr. Carruthers' current-cones and equipment for measuring underwater wire angle and direction. They have been tested in all kinds of weather.

Oceanography Department, University of Liverpool

Regular observations of surface temperatures and salinities, three times a week, at each of 9 stations in the Irish Sea, were continued throughout the year.

The marine occurrence of cadmium was studied and work has continued on the distribution of a number of other trace metals in sea water. Methods were developed for the estimation of copper and total ionic nitrogen in sea water.

With the co-operation of the Post Office Engineering Department, records of flow through the North Channel were obtained during the year, by measuring the voltage produced in a telephone cable running from Portpatrick to Donaghadee.

Further observations of turbulence in tidal currents were made off Anglesey in July, by means of the electromagnetic flow meter. A full analysis of the records obtained in August 1954 has been made, which has provided new data on the scale of the turbulent eddies and the shearing stresses which they produce near the bottom.

Marine Biological Association, Plymouth

The monthly cruises to the international hydrographical station E1 (50°02′ N., 4°22′ W.) have been continued. The winter maximum for phosphate (0·59 μg.-at./l. PO_4-P) was higher than it has been for 26 years.

A cruise in March to the south-west, whence most Channel water is recruited, revailed no significant enrichment. Indeed, off Ushant, phosphate was very low. The result at E1 does not forecast the return of better conditions to the Channel. However, over

the continental slope south-west of Ireland along the parallel 50°34′ N., phosphate was rich in the surface waters (> 0·75 μg.-at./l. at 11°10′ W. Long.). The source of this rich water, which is unlikely to have reached the Channel, is not known.

A further cruise in May was intended to acquire knowledge of exchange processes over the continental slope. The pattern of observations was very complex. No firm conclusions have yet emerged.

Finland

(Ilmo Hela).

Cruises. From 15. June to 27. August a cruise in the Baltic area and in the Sound was made with the R/V "Aranda". During this cruise the salinity, temperature, oxygen, pH, alkalinity, and content of phosphate, silicate, calcium, magnesium, etc. were determined at well over 100 stations. The transparency of the water and the current were measured where of interest and whenever possible. By means of the Kullenberg piston-corer 34 samples (maximum length 10 m.) were taken in different parts of the Baltic.

Observations from Commercial Vessels. Surface temperature and salinity observations were made on board one vessel on the Helsinki-Copenhagen route.

Observations at Coastal Stations and Lightvessels. Temperature and salinity observations were made at 22 fixed stations, 3 of which were established mainly in connexion with migration studies of the Baltic herring; temperature, salinity, wind, and current observations were made at 6 lightvessels. Sea-level observations were made at 13 tide-gauge stations and 12 tide-pole stations; ice observations were carried out at 71 ice stations, by 5 ice breakers, by aeroplanes, and by Finnish vessels on the winter routes.

France

(Institut des Pêches).

Le "Président-Théodore-Tissier" a appareillé de Brest au début de mai et a repris la section hydrographique faite par le navire de recherche norvégien "Armauer Hansen" en mai 1938 de la Petite Sole à l'île de Terceira (Açores); il a continué les opérations hydrologiques du sud des Açores à la côte portugaise, au large du Cap Finisterre et dans le Golfe de Gascogne.

Plusieurs profils du banc "Princesse Alice" ont été relevés aux sondeurs U.S.

Au cours de la première partie de la campagne qui a duré jusqu'au 27 juin, 180 stations hydrologiques, 860 prises de températures et prélèvements d'eau ont été effectués, 340 bouteilles dérivantes ont été mises à l'eau pour l'étude des courants ainsi que 300 cartes pour l'étude de la pollution par le mazout entraîné par le vent.

La deuxième partie de la campagne de 1955 a eu lieu en Mer du Nord et en Mer de Norvège jusqu'au 63° LN. Des sections hydrologiques ont été effectuées du Sandettié au Dogger Bank, et d'Aberdeen à la côte norvégienne suivant le 57° LN.

Des sédiments sous-marins ont été récoltés par dragages et carottages.

Les courants de fond à Utsire, aux accores ouest de la fosse norvégienne ont été déterminés par 120 à 140 m. de fond.

Le banc Svinö et ses accores ont été prospectés entre les latitudes 62° et 63° N. avec sondages et déterminations de la nature du fond.

Entre autres opérations, signalons 128 stations, 110 prélèvements d'eau de températures, 78 récoltes géologiques.

Le bateau-pilote de pêche "Donibane" basé à St. Jean-de-Luz a fait des prélèvements d'eau et des prises de températures des côtes de Vendée aux côtes espagnoles. Les conditions hydrologiques ont été déterminées aux stations fixes situées près de Boulogne, Roscoff, La Rochelle.

D'autre part, les bâtiments de la Marine Nationale ont effectué en 1955 des travaux océanographiques dans les régions suivantes:—

1) En Manche, Mer d'Irlande, Mer du Nord, côtes de Norvège ("Ailette").
2) Ouvert du Golfe de Gascogne ("Aventure").
3) Ouvert du Détroit de Gibraltar (Atlantique) ("Amiral Mouchez").
4) Ouvert de la Manche (Patrouilleurs de la 2ème région maritime).

Les observations comprennent des prélèvements en surface et des prises de température et les coupes hydrologiques suivantes: Brest—Iles Scilly; Cap Finisterre—Brest; Açores—Cap Finisterre; Cap Saint-Vincent—Casablanca.

Les résultats valables de ces travaux seront publiés au *Bulletin du Comité d'Océanographie et d'Etude des Côtes* au cours de l'année 1956.

Germany

(G. Böhnecke).

Biologische Anstalt Helgoland

Hydrographic observations were made in the course of biological research cruises with the R/V "Uthörn" in the German Bight from March to September 1955. Near List, on the Island of Sylt, sea-surface temperature was measured daily, and salinity at 14-day intervals. The temperature, salinity, oxygen content, and pH of the surface water in List harbour were observed at 10-day intervals.

Deutsches Hydrographisches Institut

Lightships. The programme for regular observation at 8 lightships—3 in the western Baltic and 5 in the German Bight—has remained unchanged since last year. The position of the lightships has also remained the same. The observations made in 1954 were published ("Beobachtungen auf den deutschen Feuerschiffen der Nord- und Ostsee", in the series Meeresk.

Beobacht. u. Ergebn., No. 7). The 1955 current measurements made with the vertical-log on board the "Borkumriff" lightship were transmitted to the Service Hydrographique for use in the *Synoptic Hydrographic Charts*.

Commercial Vessels. Surface samples were collected six times per month from ships running on the Hamburg-Hull route.

Research Vessels. Observations for the study of the relation between wind, current, the distribution of water bodies, and biological conditions were made from 7. to 28. March 1955. The whole of the southern North Sea was covered by the "Gauss", in a co-operation with two other research ships, the "Anton Dohrn" and "Uthörn", and the "P 8" and "Borkumriff" lightships. In addition, continuous measurements of current were made over a period of 15 days by 12 recording paddle-wheel current-meters. Some of the results have been summarized by G. Dietrich in Ann. Biol., **12**.

Deutsche Wissenschaftliche Kommission für Meeresforschung

In 1955 hydrographic investigations were carried out on five cruises made with the "Anton Dohrn".

(a) In March a cruise was made in the southern North Sea in co-operation with the "Gauss" and "Uthörn", and two lightships.

(b) A cruise was made in the Irminger Sea from May till July. Observations on layering and the circulation of the Irminger Sea as a whole were made at 126 stations. Some of the results are given by G. Dietrich in Ann. Biol., **12**. A full report on the scientific results, covering also the turbidity observations and the chemical investigations has been prepared by G. Dietrich, J. Joseph, & K. Kalle and is in course of print (Ber. Wiss. Komm. Meeresf., 1956).

(c) A cruise was made in the central and northern North Sea. Observations for the study of the discontinuity layer present in summer and the hydrographic conditions at the sea bottom were made at 77 stations. The results are reported by G. Dietrich in Ann. Biol., **12**.

(d) In September-October a cruise was made in both East and West Greenland waters, to study the hydrographic conditions on the Dohrn Bank, on the Greenland shelf between Denmark Strait and Davis Strait, and in the Atlantic on a section between C. Farewell and the Orkneys. Some of the results are described by W. Krauss in Ann. Biol., **12**.

(e) Lastly a cruise was made in November-December off north Norway and in the Barents Sea. Observations were made for studying layering and the water circulation at 64 stations. The results are summarized by W. Krauss in Ann. Biol., **12**.

Institut für Seefischerei, Hamburg

During 1955 the German Fishery Protection Vessels made 328 hydrographical observations at 39 stations on the fishing grounds worked by the German fishing fleet.

Institut für Meereskunde der Universität Kiel

Throughout 1955 serial observations were carried out by the R/V "Südfall" in Kiel Bay, and in the Belts and Kattegat. To some extent this work was done in connexion with biological research work. In particular the influence of the unusually warm and calm summer on the aeration and renewal of the bottom water in the western part of the Kiel Bay was studied.

Routine hydrographical observations were continued at monthly intervals at three stations in the Kieler Förde, and daily surface water samples were taken in Kiel harbour.

Iceland

(U. Stefánsson).

Cruises. From January to September monthly surveys were made at fixed stations in the north Icelandic coastal area. As in the preceding year, measurements of temperature, salinity, dissolved oxygen, and inorganic phosphate were made during these cruises.

In connexion with the herring investigations, in June a hydrographical survey (with observations of dissolved oxygen and inorganic phosphate) was undertaken off the west, north, and east coasts of Iceland. As in previous years, these investigations extended northwards to 68° N.

In the course of the herring investigations carried out off the north of Iceland during July and the first part of August, a large number of BT observations were made.

During the second half of August, further hydrographical observations were made in the western part of the area off the north coast of Iceland.

Commercial Vessels. As in previous years, records of sea-surface temperature were obtained by means of thermographs installed in three ships, one running from Reykjavík to New York and two coasting vessels.

Ireland

(A. E. J. Went).

No hydrographical work at sea was found possible during the year but sea-surface temperatures were taken as usual at "Conigsbeg" lightship off the south-east coast of Ireland.

Netherlands

(P. Groen).

Koninklijk Nederlands Meteorologisch Instituut, Afdeling Oceanografie

1. Surface temperatures and salinities were obtained once a week from vessels on the Hoek van Holland—London and IJmuiden—Hull routes in the North Sea.

2. Surface temperatures and salinities were obtained from Weather Ships between Hoek van Holland and Pentland Firth in the North Sea on the voyages to and from Weather Stations M, I, and A, during

the period 1. January—15. August. After 15. August 3-hourly observations of surface temperature and salinity were made on all voyages to and from the Weather Stations, with daily observations on station. On voyages to station A observations were made only between the home port and 20° W. Long.

3. Three-hourly observations of surface temperature and hourly current measurements were made with the vertical-log current-meter at 6 m. depth at the "Terschellingerbank", "Texel", "Goeree", and "Noord Hinder" lightvessels.

4. Comparative current measurements were made at various depths at the following lightvessels:—

"Noord Hinder", 17.—24. May;
"Goeree", 5.—12. July;
"Terschellingerbank", 1.—7. June;
"Texel", 8.—22. March, 2.—9. August,
7.—13. December.

Two-hourly temperature and salinity observations were made at the "Texel" lightvessel at the surface, near the bottom, and mid water during the period 8.—22. March.

5. Subsurface hydrographic observations were made at Weather Station I during August and September.

Rijksinstituut voor Visserijonderzoek

1. Salinity observations were made daily at the "Goeree", "Noord Hinder", "Texel", and "Terschellingerbank" lightvessels.

2. Hydrographic observations were made on the "Antoni van Leeuvenhoek's" fishery research cruises in the southern and central North Sea.

Rijkswaterstaat

1. Hydrographic observations were made in various estuarine waters.

2. Wave measurements were made off various parts of the coast.

3. Observations for the study of currents, current eddies, and lateral eddy diffusion were obtained by means of surface and subsurface floats off IJmuiden.

Zoologisch Station (Den Helder)

Hydrographic observations were made in the Waddensea, for studies on the transport of suspended material, the relation between water movement and bottom composition, and the production of organic matter.

Norway

(J. Eggvin).

Institute of Marine Research, Bergen

Cruises. During 1955 24 cruises were undertaken by "G.O.Sars", "Johan Hjort", "Krill" and 6 chartered vessels.

Hydrographic investigations were carried out in Norwegian coastal waters each month of the year, in the Barents Sea in February, March, May, July, August, October, November; in the Norwegian Sea in January, February, June, July, August, September, November, December; in the Skagerak in June and off West Greenland in June and July.

At 1,064 hydrographic stations 11,411 observations of temperature and 11,312 of salinity were taken. In addition, analyses of 2,384 O_2 and 1,688 P_2O_5 samples were made.

Current measurements, by means of serial current meters, were made during March and April in the Lofoten area and in June off the coast of Jan Mayen and at the Eggvin bank in the Norwegian Sea between Jan Mayen and Greenland, discovered by the "G. O. Sars" on 12. June 1955. Minimum depth of the bank is 25 m. Position: 70°54′ N., 12° 50′ W.

Fixed Oceanographic Stations. Routine observations of salinity and temperature from surface to bottom were continued during the year at the oceanographic stations Utsira I and II, Sognesjøen and Skrova. Two new fixed oceanographic stations have been established: 1) Off North Cape (71°10·6′ N., 25° 55·6′ E.) from 20. May 1955. 2) In the Hardangerfjord (59°55·7′ N., 5°45·6′ E.) from 3. October 1955.

Sea Surface Thermograph Service. Thermograph records were obtained from 6 liners running the following routes from Bergen:—

1: to Newcastle,
2: to Rotterdam,
3: to New York,
4: to Kirkenes (east Finnmark),
5: to Oslo.

Salinity samples were collected in fixed positions on these routes. Thermograph records were also obtained from a liner running between Southampton and the Canary Islands in January, February, September and October.

Flødevigen Sea-Fish Hatchery, Arendal

By the "G. M. Dannevig" hydrographic investigations were carried out in Skagerak along the Arendal-Hirtshals section in January, April, and August; in fjords of southern Norway in January, September, and October; and in coastal water between Hållø and Rakkebåene in January and Oksø-Grønningen in September.

Geophysical Institute, University of Bergen

The M/S "Armauer Hansen" carried out hydrographical investigations along a number of parallel sections off Stad in August, finding also this time a stratification which remained nearly unaltered during one week. Due to repair works investigations in the fjords of western Norway were made only in March, June, August, October, and December.

Weather Ship Station M

The regular investigations at Weather Ship Station M (66°00′ N., 2°00′ E.) were continued (S/S "Polarfront I" and S/S "Polarfront II"). These investigations

include 6 stations per week, of which one station to 150 m., four stations to 1,000 m. and one station to about 2,500 m. depth.

In addition sea surface thermograph records at the same station and between this station and Bergen have been continued.

Sea-surface samples have been collected in fixed positions between station M and Bergen.

Poland

(W. Cieglewicz).

In 1955 hydrographic observations were carried out at a number of stations distributed over the southern Baltic, and at several supplementary stations in Arkona and Bornholm Deeps, in Slupsk Furrow, and Gdansk Deep. Temperature, salinity, and content of oxygen and phosphate were measured.

Progress has been made with the examination of observations made in 1954 on the transparency and colour of sea water in relation to meteorological factors; studies have also been made of the changes in the density of the sea water (depending upon temperature and salinity) which occurred in the southern Baltic in the course of the years 1948—1955.

Portugal

(A. Ramalho).

No ship being available, no research work was carried out in the sea in connexion with the Hydrographical Committee in 1955.

Scotland

(J. B. Tait).

Weather conditions during the first two months of 1955 restricted the operations of Scottish research ships to the inshore and immediately offshore waters of Scotland; mainly to the mid-east coastal region including the Forth and Tay estuaries, and to the neighbourhood of the Butt of Lewis in the west. From March until December, however, the northern North Sea from about latitudes 57° N. to 61° N. was frequently surveyed, and the Faroe-Shetland Channel region, in single or double cross-sections (or in intensive survey for biological purposes of its eastern waters) was visited in each month except October from March until November inclusive. In April-May the Faroe-Iceland and south-western Icelandic regions were covered, while in July the western and south-western approaches to the Faroe-Shetland Channel between latitudes 57° N. and 63° N. and westward to longitude 17° W. were included.

The hydrographical results in round figures were, from the occupation of almost 1,400 stations, the recording of over 6,800 sea temperature observations, somewhat fewer (6,650) salinity observations, 1,600 oxygen observations and almost 3,000 phosphate results. About 2,000 surface drift-bottles were liberated from selected positions throughout the year. In addition some 700 surface drift-bottles were set afloat in the north-eastern Atlantic Ocean by the good offices of the Weather Ships organization. Details of these operations will be found in Ann. Biol., **12**.

Spain

(F. Balén).

Instituto Hidrographico de la Marina

Tidal observations for the reduction of soundings were carried out in the following areas:—

Atlantic Ocean:	La Carraca (Cádiz); Huelva, Isla Cristina; Santa Cruz de Tenerife.
Mediterranean:	Villanueva y Geltrú; Arenys de Mar; Vallcarca; Blanes.
W. coast of Africa:	Villa Bens; Angra del Caballo; Angra de Cintra; Güera; Villa Cisneros.

Current measurements were made in the following localities:—

Spanish Guinea:	Santa Isabel de Fernando Póo; Puerto Iradier; Bata; roadstead N. of Corisco; roadstead of Isla de Annobón; environs of Islote de Bane (Corisco); Bahia de Concepción; Bahia de San Carlos.
Mediterranean:	Environs of Puerto de Arenys de Mar.

W. coast of Africa:

N.	W.
27°22′	13°16·5′
27°32′	13°20′
27°47′	13°08·5′
27°57′	13°02′
28°03′	12°52·5′
27°06·5′	13°29·5′
27°15′	13°26′
27°23·5′	13°23·5′
23°50·5′	15°58′

Instituto Español de Oceanografía (R. Garcia-Rodriguez).

Cruises. Oceanographic cruises with "Xauen" were undertaken in the Alboran Sea and the Straits of Gibraltar in April-May and in the Atlantic to the north-west of the peninsula in July-September. Determinations of temperature and salinity (from the depths 0, 25, 50, 100, 150, 200, 300, 400, 500, and 600 metres) and of phosphates and oxygen content were made on all these cruises.

On board ships of the tunny fleet physical and chemical studies of the waters near Larache, Morocco, were undertaken in May-June.

Coastal Laboratories. Physical and chemical factors were determined weekly at coastal stations near San Sebastian, Santander, Vigo, Málaga, Barcelona, Palma de Mallorca, and Santa Cruz de Tenerife.

Sweden

(B. Kullenberg).

Sections P and M were worked in February, March, April, June, July, and October.

Regular observations of temperature, salinity, and currents were carried out at Bornö Station and at 10 Swedish lightships.

Hydrographical observations were made in the fjords on the west coast of Sweden every three months.

Arrangements have been made to carry out drift-bottle experiments in the Baltic.

During a hydrographical cruise in May observations were made for the study of pollution in the Sound.

The hydrographical conditions in the deep basins of the Baltic were investigated in March.

Observations of temperature, salinity, and oxygen content were carried out on biological cruises in the Baltic in April, July, August, and November, and in the North Sea in August.

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Plankton Committee

1955

By E. Steemann Nielsen

Belgium

(E. Leloup).

The following observations were made:—

"West-Hinder" Lightship

(a) A surface water sample of 100 litres was collected weekly and filtered through No. 25 silk for phytoplankton.

(b) A vertical haul, from bottom to the surface, was made weekly with a net of No. 3 silk for zooplankton.

Fishery Research Vessel "Hinders"

(a) Stations B 13, 14, 15 and 16 (on the line Gravelines—Deal) and Station B 22 (off Nieuport, on the Belgian coast).
Once a month throughout the year a vertical haul was made from bottom to the surface with a net of No. 3 silk, for zooplankton.

(b) Vertical hauls were made at regular intervals at various places off the Belgian coast on cruises with the "Hinders" undertaken for experimental fishing.

Denmark

(Jul. Grøntved).

1. Investigations of the production of organic matter by the phytoplankton in the Kattegat and Great Belt were continued throughout the year. Every two weeks measurements were made at the "Anholt Nord" and "Halsskov Rev" lightships. The ^{14}C technique was used.

Similar investigations were carried out in certain shallow coastal waters. Series covering a whole year are now available for three such localities—Venø bight in the western part of Limfjord, Dybsø fjord, and Karrebæksminde bight. The quantity of algae plankton present in these localities was determined, and a report on the subject has been prepared by J. Grøntved.

2. Mr. Grøntved investigated the production of organic matter by the microscopic algae living on the sea bottom at 5 localities in shallow coastal waters.

A modification of the ^{14}C technique was employed. In addition, the diatoms present were counted.

3. Investigations into the food of the herring near Bornholm in the Baltic and on the Bløden Ground in the North Sea were continued. A report by Mr. Vagn Hansen on the food of the herring on the Bløden Ground was published.

4. Fishing for large plankton with the ring net was carried out in the Kattegat by the "Biologen" in April, May, June, and November. At almost all the stations vertical hauls were made with the Hensen net. The fat content of the plankton in the Kattegat and in the waters around Bornholm was determined.

5. Samples of phyto- and zooplankton were collected on cruises of the "Dana" and "Jens Væver" in the southern part of the North Sea.

6. Observations of the production of organic matter were made with the ^{14}C technique during the summer cruise of the "Dana" in the North Sea, the Faroes region, Greenland waters, and the North Atlantic. Quantitative zooplankton hauls with stramin nets in the North Atlantic were worked up by Mr. VAGN HANSEN.

7. Production of organic matter by the phytoplankton at two coastal stations in Greenland—near Godthåb and near Narssaq—was measured once a month from July onwards.

8. Hensen-net hauls were made by the "Dana" at stations in Davis Strait. Monthly hauls were also made by the "Adolf Jensen" and "Immanuel" throughout the year at fixed stations off the coast and in the fjords, especially in Godthåb and Tunugdliark fjords.

Greenland (PAUL M. HANSEN).

Pelagic hauls with the 1-m. stramin net were made throughout the year at various stations in the fjords, along the coast, and on the banks. In the Godthåb and Julianehåb districts both pelagic and vertical hauls were regularly made with the Hensen net at fixed stations. Productivity measurements were also carried out at these stations.

England

(I. G. CATTLEY).

Barents Sea. Fewer samples were taken in the Bear Island area in 1955 than in previous years because of bad weather and other calls in the ship's time. The line of stations west of Bear Island was worked in April and September, and that north of Bear Island five times between March and September. The standing crop of zooplankton in summer was between the low value of 1953 and the high one of 1954. In September, 19 series of hauls were made west of Spitsbergen, giving good catches of zooplankton.

Atlantic. Vertical hauls with coarse silk nets from 100 metres to the surface have continued from British Ocean Weather Ships.

North Sea. Five cruises were made in the Southern Bight between January and March with the object of maintaining contact with specific bodies of plaice eggs and larvae, in order to obtain information on the conditions producing the very high mortalities that had been recorded in the past. Results showed that the fate of two bodies of larvae which were followed successfully for ten days or more were very different, according as to whether the associated plankton was abundant or scarce.

Hensen-net observations at the usual monthly Flamborough Line stations were carried out from April to September, as well as the cruise regularly made off the N.E. coast in June, both for species, numbers, and for dry weight and fat.

On the Flamborough Line the general level of zooplankton was comparable to that in 1954, in which year it showed a striking decrease after having maintained a fairly steady value for many previous years. The figures for the numbers of *Calanus*, which did not correspond with this trend, continued high in 1955. The standing crop of phytoplankton remained at its post-war low level.

The June cruise which has also shown the increase in *Calanus* since 1950, maintained the high level of this copepod in 1955.

In October, a plankton grid in conjunction with an echo-sounding survey was made over the East Anglia herring grounds. *Rhizosolenia styliformis* was present in densities of over 100,000 cells per cubic metre in the north-east of the area.

Finland

No report received.

France

No report received.

Germany

(J. KREY).

Biologische Anstalt Helgoland

1. During the cruises of the "Anton Dohrn", "Gaus", and "Uthörn" to the southern North Sea in March and April 1955 quantitative plankton hauls were made with the larvae-net ("Dohrn" 70, "Gauss" 57, "Uthörn" 56), and the Petersen young-fish trawl ("Dohrn" 41, "Uthörn" 14). Phytoplankton samples ("Dohrn" 49, "Gauss" 33, "Uthörn" 54) were also obtained, to supply data for studying the relations between the distributions of water bodies, fish fry, and plankton. (AURICH, GILLBRICHT).

2. In connexion with hydrographical studies of the mixing of the East Greenland and Irminger Currents, during the "Anton Dohrn's" cruise in May, June, and July, 96 vertical hauls were made with the larvae-net at 84 stations, and about 200 phytoplankton samples were collected in the area between Iceland and Greenland. (AURICH).

3. The development and propagation of the flagellate *Phaeocystis globosa* and the Anthomedusae *Ectopleura* and *Margelopsis* were studied in laboratory cultures as was also the morphology of the larvae of *Crepidula*. (KORNMANN, WERNER).

Institut für Meeresforschung, Bremerhaven

Investigations were made on the question of the development of species in the marine pelagic fauna. (FRIEDRICH, see list of publications).

Institut für Meereskunde der Universität Kiel

1. On the "Anton Dohrn's" cruise in the southern North Sea in March 1955 observations were made of the standing crop of biomass, and the quantity of seston and chlorophyll present. Numerous zooplank-

ton samples obtained from the vertical and horizontal young-fish hauls were examined for medusae, decapod larvae, and other forms of macroplankton, to correlate their distribution with the hydrography, especially with the inflow of water of high salinity from the Kattegat. (Banse).

2. Observations were carried out in Kiel Bay on two anchor stations for investigation of the diurnal migration of copepods in strongly stratified waters. (Banse).

3. Further observations were made to complete a study of the degree of fertilization and the biomass in coastal waters. (Krey).

Iceland

(H. Einarsson).

During the cruises of the R/V "Ægir", between 27. May and 21. September, plankton samples were collected at 373 stations. Volume was measured on board ship by the displacement method and a preliminary estimate was made of the relative frequency of occurrence of the most important plankton organisms.

Ireland

(A. E. J. Went).

No plankton work was done during 1955.

Netherlands

(B. Havinga).

The operation of different types of plankton net was studied; Hensen-net hauls were compared with oblique hauls with a larvae-net; comparisons were made between hauls with horizontal nets of different colour and with nets with and without a warp crossing the mouth.

The patchiness of plankton organisms was studied and a provisional report was communicated to the Council. A short report on the drift of copepods along the Dutch coast was completed.

Norway

Fisheries Directorate, Bergen

A number of sections were run with the "G. O. Sars" over the coastal banks between 61° and 67° N. at the end of March, in order to investigate the distribution of fish eggs and larvae. Vertical hauls were made with a 1-m. net at 53 stations.

Herring larvae were abundant off Ona in Möre (there were more than 2,000 per square metre of surface) and were also numerous on the Fröya and Halten banks. Further northwards only few larvae were found. All the larvae were in early stages of development.

Coalfish larvae were taken mainly on the Halten bank, where they numbered 140 larvae per m². A few specimens were also found further south, off Möre. Larvae of Norway pout were also numerous on the Halten bank.

Zooplankton was scarce on all the banks; there was usually less than 1 ml. of drained plankton per m². Off Möre it was a little more abundant, at 5—8 ml. or more per m². Along the edge of the continental shelf there were 10—30 ml. per m². consisting mainly of *Calanus finmarchicus* (stage V and adult).

The usual spring survey for fish eggs and larvae in the coastal areas of northern Norway started at the end of April, and covered the Halten and Sklinna banks and the region from the Vestfjord to North Cape. As in earlier years, Clarke-Bumpus plankton samplers were used, and in addition, vertical hauls with a 1-m. net were made at nearly every station.

In the Lofoten area, cod larvae were scarcer than in 1954, and the eggs were hatching very much later. Larvae of haddock, coalfish, and Norway pout were also very scarce. This state of affairs may be correlated with the temperature of the upper 50 metres, which was lower during the spring than in any previous year, except 1941.

On the Halten and Sklinna banks larvae of coalfish and Norway pout were still relatively numerous at the end of April. The numbers observed being 37 and 119 per m²., respectively.

A comparison between samples taken in vertical hauls with the 1-m. net, and in stepped horizontal hauls with the Clarke-Bumpus sampler showed that the 1-m. net took zooplankton and fish eggs (reckoned per m². of sea surface) in about the same relative numbers as the C.B. samplers, but that it took only one half to one third of the expected number of fish larvae. This clearly shows that even small fish larvae may avoid plankton nets of conventional type.

The work in 1955 at the fixed oceanographical stations was somewhat less than usual; no plankton samples were received from the Ona and Eggum stations. A new station was established near North Cape, and plankton was sampled from the end of May onwards through the year.

Horizontal and vertical hauls with the usual plankton nets were taken weekly in the upper 100 m. layer at station M in the Norwegian Sea. A series of vertical hauls from 2000 m. to the surface was worked each month. During the period June-October an unusually large number of *Salpa fusiformis* were present in the plankton; both the solitary form, and chains of salps occurred in lengths of a metre or more.

Vertical hauls with the Nansen net were made during cruises of the "G. O. Sars" in the Barents Sea in February, March, July-August, and October, and some oblique hauls were made with a 2-m. net on the coastal banks in May. A high-speed net, 0·5 m. in diameter, was tried on the coastal banks in July.

A report on the zooplankton populations of the Norwegian Sea was published. (K. F. Wiborg).

Investigations into the food of the sprat were continued, observations being made for this purpose in the fjords south of Bergen from the beginning of

May to the middle of August. The occurrence of fish fry, especially of sprat, was recorded. The grid of stations was extended, as part of a detailed programme for a thorough investigation of the biology of the Hardangerfjord, set up by the Universities of Bergen and Oslo. (K. R. Gundersen).

In the Skagerak and Kattegat vertical hauls were made with a 1-m. net in the upper 50 metres from 27. May to 23. June, in order to locate the spawning grounds of the sprat and to assess the numerical strength and success of the spawning. (G. Dannevig).

Measurements of the production of phytoplankton were made by means of ^{14}C on the coastal banks of western Norway between Bodö and Stadt at the end of March, and in the Barents Sea in July-August. Water samples were taken simultaneously for an estimate to be made of the standing crop of phytoplankton. These observations are now worked up.

At the beginning of June the water in some of the fjords south of Bergen was reported to be of an unusual green or milky colour. An aeroplane was chartered and the distribution of the discoloured water studied by means of colour photographs taken from the air. At the same time hydrographical observations were made and water samples collected by research vessels. The coccolithophorid *Coccolithus Huxleyi* was shown to be present in numbers up to 115 millions of cells per litre of sea water. The production of this mass was probably caused by an influx of Atlantic water induced by favourable wind conditions, long hours of sunlight, and a warming of the surface layers. A report of the investigations is ready for publication. (G. Berge).

University of Oslo (T. Braarud).

I. Surveys

Quantative phytoplankton surveys were undertaken in the following areas:—

(a) The Norwegian Sea. The microscopical examination of the samples collected during the "G. O. Sars" cruises in 1952—53 was continued. (K. R. Gaarder, E. Ramsfjell).
(b) North of Iceland in summer. (Th. Thordardottir).
(c) Weather Ship A, in summer. (W. Dawson).
(d) Hardangerfjord, throughout the year. (P. Hjelmfoss).
(e) Tønsbergfjord, throughout the year. (A. Rom).

II. Special Investigations on Phytoplankton

(a) Studies were made of coccolithophorids in the electron microscope. (K. R. Gaarder, P. Halldal, E. Paasche).
(b) Studies were made on phototaxis in dinoflagellates. (P. Halldal).
(c) Studies were made on the production of poisons by dinoflagellates. (K. Baalsrud, O. Kjølberg).

Poland

(W. Mańkowski).

Material obtained for studies of the eggs and larvae of commercial species of fish, and the macroplancton collected in the southern Baltic by the research vessels "Siedlecki" and "Birkut" in the course of 1952—1954 were worked up.

A paper on the weight of the plankton biomass, expressed in g./m.^{2} was completed. The study was based on the material collected at fixed stations distributed over the whole of the southern Baltic, Gdansk Deep, Slupsk Furrow, Bornholm Basin, and Arkona Deep.

Scotland

(J. H. Fraser).

The four Scottish research vessels continued to operate during 1955, to cover as wide an area as possible in the northern North Sea, Faroe, and northwest of the British Isles. Also included was a cruise to Iceland and the Denmark Strait in April and May when the planktonic objective was the assessment of the planktonic stages of the halibut. (A. D. MacIntyre).

Using similar gear to that reported last year the other main objectives of these investigations were: the general assessment of the phytoplankton (T. Lovegrove); the zooplankton, the relationship between the plankton and the environmental conditions, and the causes of diffuse echo-traces (J. H. Fraser); and the 1955 broods of planktonic stages of fish, particularly haddock and herring (A. Saville). Mr. Steele continued his study of the productivity of the northern North Sea with particular reference to the Fladen area. Cultures of diatoms and flagellates are being maintained and used for bio-assay of the growth-promoting and growth-inhibiting factors found in substances extracted from sea water. (R. Johnston, J. Bentley, R. Walton).

The special collections with the Hardy Plankton Indicator for analyses at the Leith Laboratory continued to be taken in 1955 as part of the collaborative programme on the herring plankton relationships. Assessments of vitamin B_{12} in the plankton and in sea-water samples taken by Scottish vessels have been made by the National Institute of Research in Dairying. (J. Cowie).

Sweden

(Armin Lindquist).

In connexion with herring investigations in the Gulf of Bothnia during summer 1955, plankton samples were obtained for routine assessment of the composition of the zooplankton. Most of the samples came from two districts, namely, the archipelago off Luleå 65°40′ N., 23°0′ E. and off the coast of Medelpad (south of Sundsvall 62°0′ N., 17°40′ E.). Of the species occurring in the samples from the Luleå archipelago in September the most abundant were *Bosmina core-*

goni maritima P. E. Müller and *Daphnia* spp. *Limnocalanus grimaldii* (de Guerne) was taken only in the outer part of the archipelago in the deeper water (50 m.). Off the coast of Medelpad this form often occurs in immense concentrations below the discontinuity layer in relatively deep water, e. g., at the station at Brämökalv on 29. July. Four vertical hauls were made with the Hensen net (gauze No. 3) and gave the following results:—

Hour	Depth, m.	Number of *Limnocalanus grimaldii*
0830	40—0	360
	50—0	5,330
1100	40—0	880
	60—0	20,300

(bottom depth ca. 60 m., temperature at 0830, surface, 15·6° C.; 15 m., 14·7°; 20 m., 4·0°; 30 m., 2·9°; 50 m., 2·0°). According to a verbal communication from Mr. G. Otterlind the ELAC-echograph recorded distinct signals between 45 and 60 m.

As regards the plankton disease recorded by Vallin (Ann. Biol. (1953), **10**, p. 138) only two specimens of *Eurytemora hirundoides* Nordqvist from about 60 samples showed an infection of a parasitic mould resembling *Leptolegnia baltica* Höhnk et Vallin. The two specimens were caught off Juniskär, south of Sundsvall, on 5. and 9. September.

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